**In this protocol, ACC or vibration sensor is always used to determine whether the vehicle is stationary or moving, and the priority level ACC is priority.**

**For example: Check ACC is not connected enable vibration sensor judgment.**

**The protocol belongs to 4G general data dedicated**

**All protocols begin with \*NB**

1. **Heartbeat packet N00**

**General information:**

**^NB,YYYYYYYYYY,VS,DDMMYY,HHMMSS,S,D,latitude,G,longitude,speed,direction,vehicle\_status,BASESTATION ，A1,A2,A3,A4，CRC&**

**Add four fields: Separated by commas**

**１.A1:TIME\_ZONE**

**２.A2:BIK\*01\*VALUE1\*02\*VALUE2\*03\*VALUE3\*04\*VALUE4\*05\*VALUE5**

**BIK regular**

**01 add‘\*‘plus the representative value**

**02 add‘\*‘plus the representative value**

**accumulate**

**３.A3:UTC TIME ((Long shaping)**

**４.A4:current signal strength**

**Where: ^ Command header**

**XX manufacturer name, current protocol in NB, the following XX are NB**

**, delimiter**

**YYYYYYYYYY Serial number of the vehicle.**

**VS:CMD is confirmed by the central command [N00, general location information, N01, SMS address for user request, N02, MMS return for user request, A01, alarm upload data ].**

**DDMMYY: day/month/year, using local time, for easy address resolution**

**S: data significant bit (A/V/M), A indicates that GPS data is valid positioning data, V indicates that GPS data is invalid positioning data,M indicates that GPS data is blind spot retransmission of valid positioning data.**

**D: Latitude marker (N: north latitude, S: south latitude).**

**latitude: latitude,latitude format DDFF.FFFF, DD: degree of latitude (00 ~ 90), FF.FFFF: minute of latitude (00.0000 ~ 59.9999), four decimal places reserved.**

**longitude: Longitude, Longitude format DDDFF.FFFF, DDD: degrees of longitude (000 ~ 180),**

**FF.FFFF: minutes of longitude (00.0000 ~ 59.9999), four decimal places reserved.**

**G: Longitude mark (E: East longitude, W: West longitude)..**

**speed: Speed, range 000.00 to 999.99 knots, two decimal places reserved,0 by default.**

**direction: Azimuth, 0 degrees due north, 1 degree resolution, clockwise, default 0.**

**vehicle\_status: Vehicle status, a total of four bytes, indicating the vehicle component**

**status, vehicle component status and alarm status, etc. Use ASCII characters to represent the hexadecimal value, the following is the specific meaning of each bit of each byte in the variable, bit means using negative logic, that is, bit=0 valid. As shown in the following table:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bit sequence | First byte | | Second  byte | | Third byte | | | Fourth byte | Fifth byte | | Sixth byte | |
| 0 | 0 | Vehicle fuel cut-off status | 0 |  | 0 | ACC off(23) | 0 | Anti-robbery alarm(31) | 0 | Low battery  alarm | 0 |  |
| 1 | 0 | GPRS blocking alarm | 0 |  | 0 | Arm/Disarm(22) | 1:Arm | Disconnect  the  external  power  alarm | 0 | Mileage  Reminders | 0 |  |
| 2 | 0 | Three  password  error  alarms | 0 |  | 0 | door open(21) | 1:open the door | Speeding  alarm | 0 | Burglar alarm | 0 |  |
| 3 | 0 | The host is powered by a backup battery | 0 |  | 0 | Engine status | 1:Engine start | Vibration  alarm | 0 | ACC on alarm(Arm status ACC ON) | 0 |  |
| 4 | 0 | GPS  Antenna  open | 0 |  | 0 | Vehicle  Over speeding | 1 Time  out | Drive into electronic fence alarm | 0 | Side door  alarm | 0 |  |
| 5 | 0 | GPS  Antenna  shorted | 0 |  | 0 | trunk | 1 on | Drive out of the electronic fence alarm | 0 |  | 0 |  |
| 6 | 0 |  | 0 |  | 0 | Handbrake  status | 1:on | GPS  Antenna  open | 0 |  | 0 |  |
| 7 | 0 |  | 0 |  | 0 | Hood status | 1:start | GPS  Antenna  Shorted alarm | 0 |  | 0 |  |

**BASESTATION base station code :MCC: country code, MNC: carrier code, LAC and CID for base**

**station code**

For example: 460:00:10591:31726 is MCC: MNC: LAC: CID

timestamp: timestamp, UTC time, from UTC time 1970-01-01 00:00:00 to the current number of seconds

**CRC check code: CRC check from the beginning of the packet to the end of the CRC bit;**

**(extended part)**

Back：

^XX,YYYYYYYYYY,VR,VS,RESULT,UTC TIME,CRC&

R: Response returned [R00, general positioning information, R01, SMS address requested by the user, R02, returned by the user requested MMS].

VS: Answer the command

RESULT: success or failure of the operation, or text message address encoding: [detailed address information encoding], [detailed address information encoding] [picture encoding] MMS image encoding

1. **Single query command Q21**

**One time request query:**

VS: Q21

N: 1, that's mean one request returns, multiple queries can also be extended;

T: Time range, 10~600 seconds to return at regular intervals;

**The device returns the result: N00 heartbeat packet**

1. **Other parameter configuration (refer to NTO GSM/GPS instruction command list) C31**

**The parameter configuration is in the following format:**

**^XX,YYYYYYYYYY,VS,PHONE,PASSWORD,COMMAND,RAND,UTC TIME,CRC&**

**VS:C31**

PHONE: According to the actual meaning of the command, fill in a valid number (some commands require the number to be returned by text message, and some commands that do not need to return a text message can only fill in this field)

PASSWORD: For uniformity, only this section needs to be populated.

**COMMAND: unified as a GSM command command (combined with the previous GSM operation command mode)**

RAND: serial number or random number;

Returned：^XX,YYYYYYYYYY,VR,VS,RESULT,**UTC TIME**,CRC&