**Protocol description GP200**

1. **Incoming data packet description**

A data packet consists of several data fields. Each data field starts with a header. The following description explains the headers and the format of the data that follows the header.

* 1. GPS coordinates of a ‘stop’ (Header 0)

Length: 7 bytes

Structure: 000000AB BBBBBBBB BBBBBBBB BBBBBBBC CCCCCCCC CCCCCCCC CCCCCCCC

Header mask: 6 bits

Header result: 0 (000000XX)

1. **GPS reception**

Length: 1 bit

Format: 0: No GPS reception

1: GPS reception OK

1. **Latitude**

Length: 24 bits

Format: latitude \* 50000 + 4500000

1. **Longitude**

Length: 25 bits

Format: longitude \* 50000 + 9000000

* 1. GPS coordinates (Header 8)

Length: 7 bytes

Structure: 000010AB BBBBBBBB BBBBBBBB BBBBBBBC CCCCCCCC CCCCCCCC CCCCCCCC

Header mask: 6 bits

Header result: 8 (000010XX)

1. **GPS reception**

Length: 1 bit

Format: 0: No GPS reception

1: GPS reception OK

1. **Latitude**

Length: 24 bits

Format: latitude \* 50000 + 4500000

1. **Longitude**

Length: 25 bits

Format: longitude \* 50000 + 9000000

* 1. Date and time of a ‘start’ (header 16)

Length: 4 bytes

Structure: 000100AA AAAAAAAA AAAAAAAA AAAAAAAA

Header mask: 6 bits

Header result: 16 (000100XX)

1. **Time**

Length: 26 bit

Format: (year\*35942400 +month\*2764800 +day\*86400 +hour\*3600 +minute\*60 +second)/10

* 1. Date and time (header 24)

Length: 4 bytes

Structure: 000110AA AAAAAAAA AAAAAAAA AAAAAAAA

Header mask: 6 bits

Header result: 24 (000110XX)

1. **Time**

Length: 26 bit

Format: (year\*35942400 +month\*2764800 +day\*86400 +hour\*3600 +minute\*60 +second)/10

* 1. Average coordinates (Header 56)

Length: 7 bytes

Structure: 001110AB BBBBBBBB BBBBBBBB BBBBBBBC CCCCCCCC CCCCCCCC CCCCCCCC

Header mask: 6 bits

Header result: 56 (001110XX)

1. **Reserved**

Length: 1 bit

Format:

1. **Latitude**

Length: 24 bits

Format: latitude \* 50000 + 4500000

1. **Longitude**

Length: 25 bits

Format: longitude \* 50000 + 9000000

* 1. Speed (Header 64)

Length: 2 bytes

Structure: 010000AA AAAAAAAA

Header mask: 6 bits

Header result: 64 (010000XX)

1. **Speed**

Length: 10 bits

Format: Speed in km/h

* 1. Number of satellites (Header 72)

Length: 2 bytes

Structure: 01001000 AAAAAAAA

Header mask: 8 bits

Header result: 72 (01001000)

1. **Number of satellites**

Length: 8 bits

Format: Number of satellites

* 1. Altitude (Header 73)

Length: 3 bytes

Structure: 01001001 AAAAAAAA AAAAAAAA

Header mask: 8 bits

Header result: 73 (01001001)

1. **Altitude**

Length: 16 bits

Format: Height in m. If this is greater than 32767 then the height is negative. Ex. 65533 is -3m

* 1. Direction (Header 74)

Length: 2 bytes

Structure: 01001010 AAAAAAAA

Header mask: 8 bits

Header result: 74 (01001010)

1. **Direction**

Length: 8 bits

Format: Height Direction / 2 in meter

* 1. Distance (Header 76)

Length: 5 bytes

Structure: 01001100 AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA

Header mask: 8 bits

Header result: 76 (01001100)

1. **Distance**

Length: 32 bits

Format: Distance in meter

* 1. Position error (Header 77)

Length: 2 bytes

Structure: 01001101 AAAAAAAA

Header mask: 8 bits

Header result: 77 (01001101)

1. **Position error**

Length: 8 bits

Format: Error in m

* 1. Quality GSM signal (Header 112)

Length: 2 bytes

Structure: 01110000 AAAAAAAA

Header mask: 8 bits

Header result: 112 (01110000)

1. **Quality GSM signal**

Length: 8 bits

Format: Quality GSM signal

* 1. IMEI (Header 113)

Length: 15 bytes

Structure: 01110001 AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA

Header mask: 8 bits

Header result: 113 (01110001)

1. **IMEI**

Length: 112 bits

Format: Imei in asci

* 1. GSM number of the last received SMS (Header 114)

Length: variable

Structure: 01110010 AAAAAAAA BBBBBBBB BBBBBBBB BBBBBBBB …

Header mask: 8 bits

Header result: 114 (01110010)

1. **Lenght**

Length: 8 bits

Format: Number of bytes of the following data

1. **GSM number**

Length: variable

Format: GSM number of the last received SMS

* 1. Call value (Header 117)

Length: variable

Structure: 01110101 AAAAAAAA BBBBBBBB BBBBBBBB BBBBBBBB …

Header mask: 8 bits

Header result: 117 (01110101)

1. **Lenght**

Length: 8 bits

Format: Number of bytes of the following data

1. **Call value**

Length: variable

Format: Call value. Example “:18.20:17/06/2008”

* 1. Datatype (Header 128)

Length: 2 bytes

Structure: 10000000 AAAAAAAA

Header mask: 8 bits

Header result: 128 (10000000)

1. **Datatype**

Length: 8 bits

Format: 0: position

1: start

2:stop

3:address request

* 1. Pwr supply voltage (Header 136)

Length: 3 bytes

Structure: 10001000 AAAAAAAA AAAAAAAA

Header mask: 8 bits

Header result: 136 (10001000)

1. **Pwr supply voltage**

Length: 16 bits

Format: voltage \* 345 / 12

* 1. Battery voltage (Header 137)

Length: 3 bytes

Structure: 10001001 AAAAAAAA AAAAAAAA

Header mask: 8 bits

Header result: 137 (10001001)

1. **Battery voltage**

Length: 16 bits

Format: Voltage \* 933 / 4

* 1. Status of inputs (Header 144)

Length: 2 bytes

Structure: 10010000 ABCDEEEE

Header mask: 8 bits

Header result: 144 (10010000)

1. **Input1**

Length: 1 bit

Format: 0: Off

1: On

1. **Input2**

Length: 1 bit

Format: 0: Off

1: On

1. **Input3**

Length: 1 bit

Format: 0: Off

1: On

1. **Input4**

Length: 1 bit

Format: 0: Off

1: On

1. **Reserved**

Length: 4 bits

Format: 0000

* 1. Status of inputs (Header 147)

Length: 2 bytes

Structure: 10010011 ABBBBBBB

Header mask: 8 bits

Header result: 147 (10010011)

1. **Vibrations**

Length: 1 bit

Format: 0: No vibrations

1: Vibrations

1. **Reserved**

Length: 7 bits

Format: 0000000

* 1. Status of outputs (Header 152)

Length: 2 bytes

Structure: 10011000 ABCCCCCC

Header mask: 8 bits

Header result: 152 (10011000)

1. **Output1**

Length: 1 bit

Format: 0: Off

1: On

1. **Output2**

Length: 1 bit

Format: 0: Off

1: On

1. **Reserved**

Length: 6 bits

Format: 000000

* 1. Alarm status (Header 160)

Length: 2 bytes

Structure: 10100000 ABCDEFGH

Header mask: 8 bits

Header result: 160 (10100000)

1. **Trilsensor alarm**

Length: 1 bit

Format: 0: No alarm

1: Alarm

1. **Reserved**

Length: 1 bit

Format: 0: No alarm

1: Alarm

1. **Reserved**

Length: 1 bit

Format: 0: No alarm

1: Alarm

1. **Reserved**

Length: 1 bit

Format: 0: No alarm

1: Alarm

1. **Reserved**

Length: 1 bit

Format: 0: No alarm

1: Alarm

1. **Reserved**

Length: 1 bit

Format: 0: No alarm

1: Alarm

1. **Reserved**

Length: 1 bit

Format: 0: No alarm

1: Alarm

1. **Reserved**

Length: 1 bit

Format: 0: No alarm

1: Alarm

* 1. Status of geofence (Header 172)

Length: 3 bytes

Structure: 10101100 AABBCCDD EEFFGGHH

Header mask: 8 bits

Header result: 172 (10101100)

1. **Geofence1**

Length: 2 bit

Format: 00: fence off

01: inside fence

10: outside fence

1. **Geofence2**

Length: 2 bit

Format: 00: fence off

01: inside fence

10: outside fence

1. **Geofence3**

Length: 2 bit

Format: 00: fence off

01: inside fence

10: outside fence

1. **Geofence4**

Length: 2 bit

Format: 00: fence off

01: inside fence

10: outside fence

1. **Geofence5**

Length: 2 bit

Format: 00: fence off

01: inside fence

10: outside fence

1. **Geofence6**

Length: 2 bit

Format: 00: fence off

01: inside fence

10: outside fence

1. **Geofence7**

Length: 2 bit

Format: 00: fence off

01: inside fence

10: outside fence

1. **Geofence8**

Length: 2 bit

Format: 00: fence off

01: inside fence

10: outside fence

1. **Setting the device parameters**

A data packet consists of several data fields. Each data field starts with a header. The following description explains the headers and the format of the data that follows the header.

* 1. Interval to send data (Header 101)

Length: 2 bytes

Structure: 01100101 AAAAAAAA

Header mask: 8 bits

Header result: 101 (01100101)

1. **Interval to send data**

Length: 8 bits

Format: (0-255) per 5 seconds

00000000: stop sending

00000001: 5 seconds

00000010: 10 seconds

00000011: 15 seconds

…

* 1. Setting the data fields that must be send at the ‘interval to send data’ (Header 104)

Length: variable

Structure: 01101000 AAAAAAAA BBBBBBBB BBBBBBBB …

Header mask: 8 bits

Header result: 104 (01101000)

1. **Number of headers that follows**

Length: 8 bits

Format: (0-255)

00000000: 0 headers

00000001: 1 header

00000010: 2 headers

00000011: 3 headers

…

1. **List of the headers that must be send at the ‘interval to send data’**

Length: variable

Format: header1 header2 …

* 1. Keep alive (Header 102)

Length: 2 bytes

Structure: 01100110 AAAAAAAA

Header mask: 8 bits

Header result: 102 (01100110)

1. **Interval of the keep alive packets**

Length: 8 bits

Format: (0-255) per 5 minutes

00000000: stop sending

00000001: 5 minutes

00000010: 10 minutes

00000011: 15 minutes

…

* 1. Geofence (Header 173)

Length: 16 bytes

Structure: 10101101 AAAAAAAA BBBBBBBB BBBBBBBB BBBBBBBB CCCCCCCC CCCCCCCC CCCCCCCC DDDDDDDD DDDDDDDD DDDDDDDD EEEEEEEE EEEEEEEE EEEEEEEE FFFFFFFF GGGGGGGG

Header mask: 8 bits

Header result: 173 (10101101)

1. **Number of the geofence**

Length: 8 bits

Format: (1-8)

00000001: Geofence1

00000010: Geofence2

00000011: Geofence3

00000100: Geofence4

00000101: Geofence5

00000110: Geofence6

00000111: Geofence7

00001000: Geofence8

1. **StartX**

Length: 3 bytes

Format: (0-3600000)

1. **StartY**

Length: 3 bytes

Format: (0-1800000)

1. **EndX**

Length: 3 bytes

Format: (0-3600000)

1. **EndY**

Length: 3 bytes

Format: (0-1800000)

1. **OffsetX**

Length: 1 byte

Format: (0-255)

0: geofence off

1. **OffsetY**

Length: 1 byte

Format: (0-255)

* 1. Distance (Header 76)

Length: 5 bytes

Structure: 00100110 AAAAAAAA AAAAAAAA AAAAAAAA AAAAAAAA

Header mask: 8 bits

Header result: 76 (00100110)

1. **Set distance**

Length: 4 bytes

Format: distance in meters

1. **GPRS connection parameters configurable by SMS**

Example message: Init,120,m2minternet.proximus.be,1684366951,2211,””,””

|  |  |
| --- | --- |
| Init |  |
| 120 | Interval in seconds for the device to send data to the server. |
| m2minternet.proximus.be | APN |
| 1684366951 | IP address server (100.101.102.103) |
| 2211 | Port |
| “” | Login for APN |
| “” | Password for APN |