### Communication Protocol

GPS tracker use BLE communication. Which is well support in Android and iOS.

Longitude and Latitude

Each coordinate is represented by a signed 32-bit integer. Latitude ranges from +90 00 00000 (north) to -90 00 00000 (south), while longitude ranges from +180 00 00000 (east) to -180 00 00000 (west). One degree is equivalent to 60 minutes, with the smallest unit being ten-thousandths of a minute. Latitude ranges from +5400 00000 to -5400 000000, and longitude ranges from +10800 00000 to -10800 00000.

UTC time

Time is represented in hours, minutes, seconds, and milliseconds, compressed into an integer of 86400000, still represented as a 32-bit number.

Communication Protocol:

* Service ID: "6E400001-B5A3-F393-E0A9-E50E24DCCA9E"
* Notify ID: "6E400003-B5A3-F393-E0A9-E50E24DCCA9E"
* Write ID: "6E400002-B5A3-F393-E0A9-E50E24DCCA9E"

Bluetooth Name: $GPS-D0001 (the number is derived from the MAC address to distinguish different devices)

Direct Scan Information:

In the scan information, the vendor code is 0xffff, followed by data type 0xff, followed by time, latitude, accuracy (each 4 bytes), and the last byte indicates the low part of the battery level, with the high part always being 1.

Query Battery Level and Software Version:

* Request: 0x20
* Response: 0x21 (Version number, voltage low byte, voltage high byte, GPS status; 0: no GPS not started, 1: GPS not started, 2: no GPS started, 3: GPS started)

Query Summary of All Files:

* Request: 0x30
* Response: 0x31 (File 1: start date, start time, end date, end time, length (2 bytes), ID, status; except status, all are 4 bytes; status 0: not started recording, 1: recording, 2: completed)

Continuously Query GPS Data:

* Request: 0x32 (file ID low byte, file ID high byte)
* Response: 0x33 (packet ID low byte, packet ID high byte, time, latitude, longitude; repeated 14 times; continuously until end; return 0x32 if the file ID has no recorded data)

Individually Query GPS Data (used for retransmission after packet loss):

* Request: 0x34 (file ID low byte, file ID high byte, packet ID low byte, packet ID high byte)
* Response: 0x35 (packet ID low byte, packet ID high byte, time, latitude, longitude; repeated 14 times; return 0x34 if the file ID has no recorded data)

Pause Data Collection (should be paused when querying data):

* Request: 0x36
* Response: 0x37

Start Data Collection:

* Request: 0x38
* Response: 0x39

Query Real-Time GPS Latitude and Longitude:

* Request: 0x3A
* Response: 0x3B (Latitude 4 bytes, Longitude 4 bytes, UTC time 4 bytes)