2018

NH

Date: 28/07/18

Version 1.1

ToughTracker
TCP/IP message structure

1 Contents

_____

2   Introduction

This document describes the TCP/IP message structure.
The Tough Tracker tracking device (device) is mainly in sleep mode, it wakes
up to at scheduled times to keep in touch (KIT) with the server, to check for a
TCP/IP message.
The device looks for new updates at the end of a scheduled KIT message upload. The
server acknowledges the device by sending update flags with appropriate value. For
example, if the flag is set, there is new updates are available under that particular flag
identifier. Then the device will download the relevant updates by requesting the them
sequentially. All the communications will take place in ASCII.

3   Parameter change TCPIP message protocol

The new TCP/IP message protocol will support the following parameter changes.

PARAMETER	DEFAULT		
Geo-Fence coordinates	N/A		
Geo-Fence Status	OFF		
Standard server IP address and port	52.17.104.183	53746	Example only
OTAP server IP address and port	52.17.104.183	53746	Example only
KIT interval	6 Hours		
Geo-Fence alarm interval	15 Mins		
Movement window to check breach	15 Mins		
Movement percentage	70% (10 Mins)		

---

*D – Device originated message. S – Server originated

_____

3.1 *Update flags request [D1*]*

This message requests for update flags from the server following a successful KIT upload.

<FLG>,<Device ID>

Example:
FLG,38372837293822342

3.2 *Update flags acknowledgement [S1]*

The server responds to the device with new update notifications. The updates will be notified in a 16-bit string. If all the flags are 0, indicating no new updates, the device will terminate the server connection and go to sleep.

<UDT>,<ABCDEFGHIJKLMNOP>

3.2.1 Update flag enumeration

Flag	Description
A	New firmware available
B	New Geo-Fence coordinates available
C	Geo-Fence status
D	New IP address and port
E	New OTAP IP address and port
F	KIT Interval
G	New Geo-Fence alarm interval
H	New Movement window to check breach
I	New Movement percentage
J	Current parameter request (Similar to STT command)
K-P	Reserved

1 = New updates available, 0 = No updates available

Example:

UDT,0001000000000000

_____

3.3 *A: Firmware update available*

If there is new firmware available for the device and there is no new OTAP IP/PORT available, the device will terminate the TCP/IP connection and reconnect to the OTAP IP/PORT. Then it will initiate the new hex file download protocol which is detailed in OTAP document v1.3.

```
if A ^ E = 1 then
      Download New IP/PORT
            Then
                  Initiate OTAP
```

3.4 *B: New Geo-Fence coordinates request [D]*

If flag B is set, the device will request new geo-fence coordinates from the server by employing the following protocol.

<GEO>,<Device ID>

Example:

GEO,38372837293822342

3.4.1 B: New Geo-Fence coordinates server response [S]

TT can store a single geo-fence coordinates. The geo-fence is formed by a square with two coordinates as shown in the following diagram.
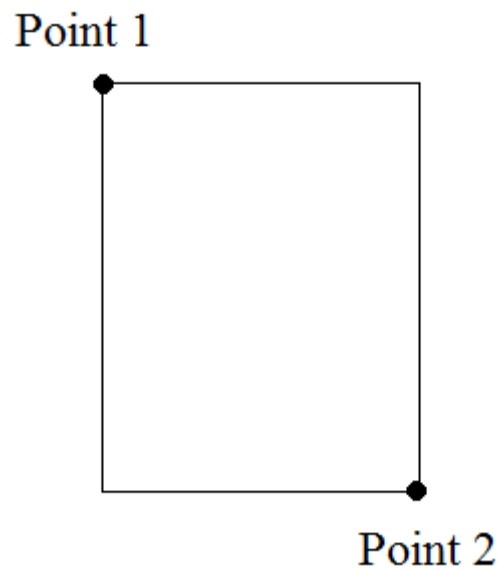
_____ 5 | P a g e

Fig 1: Two geo fence points

SQUARE (Default):

<GEO>,<Point 1 Lat>,<Point 1 Long>,<Point 2 Lat>,<Point 2 Long>

FIELD	DESCRIPTION
<GEO>	Message identifier
<Point(1/2) Latitude/Longitude>	Coordinates in decimal format

Examples:
GEO,56.4619888661,-3.0463953316,56.4619888661,-3.04639533161

3.5 *C: New Geo-Fence Status request [D]*

This message requests the new Geo-Fence enable/disable status from the server

<GES>,<Device ID>

Example:

GES,38372837293822342

3.5.1 C: New Geo-Fence Status response [S]

<GES>,<Status>

FIELD	DESCRIPTION
<Status>	0 – Disable 1 – Enable 2 etc - Reserved

Example:

GES,1

3.6 *D: New device IP/PORT address request [D]*

<IPS>,<Device ID>

Example:

IPS,38372837293822342

3.6.1 D: New device IP/PORT address response [S]

<IPS>,<New IP>,<New Port>

FIELD	DESCRIPTION
<IPS>	Message Identifier
<New IP>	IP address
<New Port>	Port number

Example:

IPS,12.12.12.12,65000

*D – Device originated message. S – Server originated
message

_____

3.7 *E: New OTAP IP/PORT address request [D]*

<IPO>,<Device ID>

Example:

IPO,38372837293822342

3.7.1 E: New device IP/PORT address response [S]

<IPO>,<New IP>,<New Port>

FIELD	DESCRIPTION
<IPO>	Message Identifier
<New IP>	IP address
<New Port>	Port number

Example:

IPO,12.12.12.12,65000

3.8 *F: New KIT interval request [D]*

<KII>,<Device ID>

Example:

KII,38372837293822342

3.8.1 F: New KIT interval response [S]

<KII>,<Value>

FIELD	DESCRIPTION
<KII>	Message identifier
<Value>	Hour settings: 1 = 24Hours 2 = 12Hours 3 = 6Hours (Default) 4 = 1Hour

*D – Device originated message. S – Server originated
message

_____

	5 = 30Mins
	6 = 10Mins
	7 = 2Mins
	8+ Reserved

Example:

KII,2

3.9 *G: New Geo-Fence alarm interval [D]*

<GAI>,<Device ID>

Example:

GAI,38372837293822342

3.9.1 G: New Geo-Fence alarm interval response [S]

<GAI>,<Value>

FIELD	DESCRIPTION
<GAI>	Message identifier
<Value>	Alarm interval in minutes

Example:

GAI,30

3.10 *H: New movement window [D]*

<MOW>,<Device ID>

Example:

MOW,38372837293822342

_____

3.10.1   H: New movement window response [S]

<MOW>,<Value>

FIELD	DESCRIPTION
<MOW>	Message identifier
<Value>	Movement window in minutes

Example:

MOW,30

3.11 *I: New movement percentage [D]*

In order to trigger geo-fence breach algorithm, the device should move for a certain period of time that expressed as a percentage of total movement window.

<MOP>,<Device ID>

Example:

MOP,38372837293822342

3.11.1   I: New movement window response [S]

<MOP>,<Value>

FIELD	DESCRIPTION
<MOP>	Message identifier
<Value>	Movement percentage (%) 0-100

Example:

MOP,70

_____

3.12 *J: Current parameter upload response [D]*

The server requests the current parameters from the device by setting this flag. As a response the device will upload an image of the current parameters to the server.

<ATI>,<Device ID>,<Firmware version>,<Geo-Fence coordinates1.1>,<Geo-Fence coordinates1.2>,<Geo-Fence coordinates2.1>,<Geo-Fence coordinates2.1>,<Geo-Fence status>,<General IP/PORT>,<OTAP IP/PORT>,<KIT interval>,<Geo-Fence alarm interval>,<Movement window>,<Movement percentage>

Example:

ATI,38372837293822342,4.0,56.4619888661,-3.0463953316,56.4619888661,-3.04639533161,12.12.12.12,65000, 12.12.12.12,65000,5,30,70