TWIG MPTP
(Mobile Phone Telematics Protocol)

for TWIG GSM/GPS products

Version 4.6
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1. INTRODUCTION

TWIG MPTP (Mobile Phone Telematics Protocol, "MPTP") is a protocol developed by Twig Com Ltd. It is intended for integrating TWIG personal alarms and other telematics solutions through 3G/GSM networks to one or several central stations, such as alarm receiving centre (ARC).

MPTP enables, for example, the sending of alarm, location, tracking and status messages between TWIG device and the central station. GPRS/IP and SMS can be used as bearer, each having their practical benefits.

Application examples

- lone worker safety
- personal safety
- social alarms
- telecare
- sports, outdoors and recreation
- fleet management
- asset security
- staff management

What about privacy?

There is general concern about privacy issues with personal alarms and location-based services. Can anybody track my location through MPTP?

TWIG devices are typically deployed in systems and services where the user consents to her location being transmitted to the central station, either to improve her safety or to improve work flow. Where this consent does not exist or location information is not required, TWIG devices can be either ordered without location capability or configured to disable acquisition and transmission of location. Authorisation of TWIG devices ("Whitelist") can be used to limit or deny external access to device information.

For further information

If you have any questions, please pay a visit to our web pages. You will also find our contact information there.

http://www.twigcom.com

2. OVERVIEW OF THE SYSTEM

MPTP messaging takes place in the 3G/GSM/IP network using specially formatted message strings. Bearer can be chosen as GPRS/IP, SMS, or GPRS/IP with SMS backup. This chapter describes the roles of the actors in such MPTP messaging exchange and gives an overview of some typical scenarios involving telematics messaging.

A more detailed and technical description of the format, structure and use of MPTP commands is given in subsequent chapters.

2.1. Actors

MPTP messaging always takes place between two parties. The typical actors in such exchange are a Central Station and a Mobile Telematics Terminal.

2.1.1. Central Station

A Central Station (CS) has capabilities for monitoring and controlling one or more Mobile Telematics Terminals (MTT). Such remote monitoring and controlling functionality includes receiving alarms, requesting and receiving position updates from terminals, configuring the terminals' setup, and receiving and distributing status information.

TWIG devices can support several parallel Central Stations, such as an Alarm Receiving Centre (ARC) and a Device Management Server, each with its own IP connection. This is very useful for example when a specialist alarm monitoring and responding service is used. Alternatively all Central Stations tasks and functions can be implemented through one server and IP connection.

A Central Station can be a server, a service, or a smart phone application which is sending, receiving and processing MPTP messages.

In subsequent chapters, the Central Station will often be referred to as **CS**.

2.1.2. Mobile Telematics Terminal

A Mobile Telematics Terminal is a mobile device, often positioning-capable, with functionality for receiving and responding to MPTP messages sent by the Central Station. Its typical uses include sending alarms, position information and status information.

Examples of Mobile Telematics Terminals include TWIG One personal alarm device, TWIG Embody wearable personal alarm device.

In subsequent chapters, the Mobile Telematics Terminal will often be referred to as **MTT**.

2.1.3. Authorisation and access rights

It is desirable to limit the parties from which MPTP messages used for controlling and monitoring a Mobile Telematics Terminal are allowed, not only to protect the user's privacy and to ensure security of stored data, but also to limit the number of messages sent.

TWIG Protector, TWIG Protector Pro, TWIG Embody, TWIG One, TWIG One Ex

In TWIG devices, the setting **Service centre number** defines one SMS number which has full rights for remotely controlling and configuring all features of the device. If this number is not defined then remote controlling is possible from any SMS number.

The setting **Whitelist** determines whether the list of **Authorised numbers** is used for deciding whether a call, location or tracking request should be processed and responded to.

2.2. Applications

MPTP provides a wide set of commands for realising the application examples listed in chapter 1. The commands can be categorised according to their type as is done below; this categorisation will be used throughout this document. It should be noted that all report commands typically contain the sending device's position information.

2.2.1. Tracking

The term *tracking* means a function, which enables monitoring a target's position and possible movement. The tracked Mobile Telematics Terminal will automatically send a series of MPTP messages of its position to the Central Station as defined by the tracking process. Typical tracking scenarios are as follows:

1. A Central Station wants to follow the movements of a Mobile Telematics Terminal.

   Examples: (1) A delivery company wants to monitor the movements of a valuable transport. (2) Monitoring centre of a security company wants to know how a security guard is moving.

   The centre sends a **tracking request** MPTP command to the terminal, requesting the terminal to send **tracking report** MPTP commands at regular intervals. The centre can specify the number of reports it wants to be sent, or it can set a duration or end time for the tracking process. Setting timing for a single report is also possible.

2. A Central Station wants to be informed when a Mobile Telematics Terminal enters or exits an area.

   Examples: (1) An electricity company wants to know when a team of electricians arrives at a storm damage area and when it departs from there. (2) A parent wants to know when her child crosses the border of a permitted area.

   The centre sends a **tracking request** MPTP command requesting the terminal to send one or more **tracking report** MPTP commands when it enters and/or exits an area. The centre can specify whether it wants to receive just one report or get reports at regular intervals while the target is inside or outside the area.

3. A Central Station wants to be informed when the speed of a Mobile Telematics Terminal goes over or under a limit.

   Example: A delivery company wants to know when a valuable transport is on the move or when it stops.

   The centre sends a **tracking request** MPTP command requesting the terminal to send one or more **tracking report** MPTP commands when its speed goes over or under the specified limit.

    4. A Mobile Telematics Terminal wants to inform a Central Station of its movements.

        Example: A social worker wants to keep his shift manager knowledgeable about his movements when entering a dangerous area.

        The terminal sends a **tracking request** MPTP command to the centre, requesting its permission to start sending tracking reports. The centre can accept or reject the request by sending an **acknowledgement** MPTP command. If the request was accepted, the terminal will start sending **tracking report** MPTP commands as it declared in its request.

The MPTP commands, which can be used for realisation of these scenarios, are described in section 4.1.7.

2.2.2. Position reporting

The simplest method of sharing the position information of a Mobile Telematics Terminal is by using positioning commands. Typical positioning scenarios are as follows:

    1. A Central Station wants to know the position of a Mobile Telematics Terminal.

        Examples: (1) A parent wants to know the whereabouts of her child. (2) The shift manager of a taxi company wants to know the position of a car in the field.

        The centre sends a **position request** MPTP command to the terminal. The terminal then responds by sending a **position report** MPTP command which contains its position information.

    2. A Mobile Telematics Terminal wants to inform a Central Station of its position.

        Example: A security guard informs the alarm centre of his position before entering a dangerous area.

        The terminal sends a **position report** MPTP command to the centre.

The MPTP commands, which can be used for realisation of these scenarios, are described in section 4.1.

2.2.3. Emergency cycle

The term *emergency cycle* refers to an automated sequence of actions taken when the end user has pressed the emergency key. External triggers such as a verticality sensor can also start the cycle. The action sequence consists of making emergency calls and sending emergency messages containing position information.

Examples: (1) An elderly gentleman falls and injures himself; pressing the emergency key causes sending an emergency report to his daughter and sets up a call. (2) A maintenance technician hits his head and falls unconscious; the ManDown sensor starts the emergency cycle, which reports his position to the alarm centre and sets up a call so that the centre can listen to the situation.

The emergency cycle functionality is started when the user of a Mobile Telematics Terminal presses the emergency key or when an automatic alarm event such as ManDown or Amber alert triggers it. The terminal will then make a series of phone calls to predefined phone numbers. It will also send **emergency report** MPTP messages which contain the position of the terminal. The Central Station receiving such a report may respond by sending an **emergency confirmation** MPTP command to let the user of the terminal know that the report has been processed. The emergency cycle can also be configured so that it does not stop until **emergency confirmation** MPTP command has been received.

The MPTP commands used for the emergency cycle are described in section 4.4.

2.2.4. **Status and information messages**

Status and information commands are used for reporting a Mobile Telematics Terminal's or its user's status information to a Central Station.

2.2.5. **Device configuring**

The term *Device configuring* refers to changing or requesting the settings of a Mobile Telematics Terminal by use of an MPTP command sent by a Central Station.

 Typical scenarios involving device configuring are as follows:

1. A Central Station wants to change the settings of the Mobile Telematics Terminal.

   Examples: (1) The alarm centre wants to change ManDown motion sensitivity in the guards' terminals (2) The emergency centre operator wants to modify the list of emergency calls which will be made when user presses the emergency key of his terminal; rather than have the user reprogram the terminal, the operator sends a configuration command which does the job.

   The Central Station sends a **persistent settings configuring request** MPTP command requesting the terminal to modify its settings accordingly.

2. A Central Station wants to request the settings of the Mobile Telematics Terminal.

   Examples: (1) The alarm centre wants to check what is the default location request action used in the guards' terminals. (2) The emergency centre operator wants check the list of emergency calls which will be made when user presses the emergency key of his terminal.

   The Central Station sends a **persistent settings request** MPTP command requesting the terminal to send its settings. The terminal then sends the **persistent settings report** containing the requested settings values.

The MPTP commands used for remote configuration are described in section 4.6

2.2.6. **Generic response messages**

The instrument receiving an MPTP command may respond by sending a command to acknowledge the reception.

Typical scenarios involving generic response messages are as follows:

1. A Mobile Telematics Terminal wants to activate a process (e.g. a tracking process, a condition check process or a route tracking process) but needs the permission of the Central Station.

   The terminal sends an activation request (e.g. a **tracking request** or a **condition check** request) to the centre. The centre can respond by sending an **acknowledgement** MPTP command indicating acceptance or rejection of the request.

2. Some terminals may be configured to report successful processing of a request as well. The **acknowledgement** MPTP command is used for this purpose.

The MPTP commands used for generic response messages are described in section 4.5.

3. MESSAGE CONSTRUCTION AND INTERPRETATION

As mentioned earlier, MPTP messages are sent between parties as specially formatted message strings, either over GPRS/IP or SMS. The standard 7-bit GSM character set is used (cf. GSM 7-bit default alphabet table.pdf).

Most MPTP messages are sent in a semi-readable ASCII format and can thus be received and read using any SMS enabled mobile phone. However, manually interpreting the data content of an MPTP message is rather tedious, so the receiving instrument should be equipped with software for reacting to the messages and their data content appropriately.

Some of the messages are partly binary and Base64 encoded (cf. 3.4) so that more data can be fitted into one message.

Unlike other MPTP messages, AGPS (Assisted GPS) messages are always sent in unreadable binary format. The instrument receiving such a message always needs to have suitable software for interpreting them properly.

The later sections of this document list all MPTP commands. For each command, its usage and format is given, along with a list of the TWIG instruments which are equipped with software for using the command in question.

3.1. Common fields

Most MPTP messages are sent in ASCII format is a semi-readable string, like the example below:

```
!TRG_01/01_4_1_norm_075%_gps_2_N68.28.43,9_E027.27.02,4_37_
08.07.2003_17:44:23_081km/h_114deg_81
```

(For the curious, the above command is sent by a tracking process with a trigger for sending messages when the speed limit of 81 km/h is exceeded.)

An MPTP command consists of a number of fields with different meanings. The fields can be found by looking for field separator characters which separate them; the underscore character (_, Unicode 0x5F) is used for this purpose. Note that the underscore character should not be used at middle of any string fields. It should also be noted that the data in the command is case sensitive, so care should be taken to use uppercase and lowercase letters as described in this document.

Some fields are common to several MPTP commands while others are specific to a command type. The following table uses the sample command above for describing some fields commonly used in several MPTP command types.

Field	Description
!TRG	<u>Command</u> A unique string of three to four characters which identifies the purpose of the command and tells how the rest of it should be read. **Note that these characters should always be written with capital letters.** The first character of the command is by default a question mark or an exclamation mark. The former (**?**) identifies the role of the sender of the message as a Central Station, while the latter (**!**) identifies it as a Mobile Telematics Terminal.

If for some reason messages which have exclamation and/or question mark as first character do not work in some network, there is a possibility to change the header characters. It is recommended though that the header characters are changed only if the default ones do not work. Note also that if the header characters are changed it should be done to all the terminals which are connected to the same system.

There is a setting by which the header characters can be changed. Note that the question and exclamation mark should not be interchanged.

In this example, the sender's role is Mobile Telematics Terminal (`!`). The command is a tracking update (`TRG`).

`01/01`   ### Part number

Sometimes, the MPTP command may need to be sent in several parts. The part number consists of the part number of the message, a slash character, and the total number of parts which make up the complete command. Please refer to Reassembling a received MPTP command (3.3) for more information on reassembling a message received in several parts.

Many commands omit this field altogether as they are always sent in one part.

In this example, the message consists of one part.

The two fields which follow are specific to the `!TRG` command. Having identified the command as `!TRG`, the instrument which receives the message can interpret the fields as Trigger type with value "4", and Service state with value "1". These values indicate that the event, which triggered the sending of the tracking update command, was exceeding a speed limit. The command then continues with common fields, as follows.

`norm`   ### Mode

A four-character string identifying the mode the instrument is in: **norm** for normal mode, **emer** for emergency mode, and **test** for testing mode. Only selected commands ever use modes other than norm.

In this example, the instrument is in normal mode.

`075%`   ### Battery level

Three digits and a percentage character, indicating the battery level of the instrument.

The battery voltage can also be sent as millivolts. This is done by sending 4 number code e.g. 3897 = 3.897V

In this example, 75% of battery charge is left.

`gps`   ### Position source

A three-character string identifying the source of the position in the message (cf. below):

gps for GPS. Position is acquired from GPS and the timestamp is related to actual acquisition time

gpa, position is acquired from GPS, but the timestamp is updated, since no movement is detected with motion sensor after last actual position fix. Note the motion sensor parameters, defining the needed movement.

gpb position is aquired from GPS, but the timestamp is NOT updated, since movement is detected with motion sensor but not calculated by gps. Note the motion sensor parameters defining the needed movement.

net TWIG Point Netloc hybrid location service.

Most commands always assume GPS to be the position source.

In this example, the position has been acquired from the GPS receiver with valid fix from receiver. It is stored as coordinates in the Position field.

1

Position format

A digit indicating the position format in which the position information in the message is given: **1** for WGS-84, and **2** for WGS-84 with precision.

If the position format is 2 (WGS-84 with precision) a field named Position precision will be located after the Position field. Otherwise it will not be present at all, this means that also the underscore characters are missing.

!GNR and !EGN always use position format 1 regardless of the value of the setting. Position format 2 (WGS-84 with precision) is not used with !GNR and !EGN because of lack of space in one SMS.

If the position format is 3 (WGS84 with SRD beacon data) data field in the end of the message will contain information on surrounding SRD Beacons.

N68.28.43,9_
E027.27.02,4

Position

Instrument's last known position at the time of sending of the message. It's contents depend on the Position source:

- If the position source is **gps**, this field contains the coordinates of the position. The Position format field determines the format used for them.

  For WGS-84, latitude and longitude are given in degrees, minutes, seconds and fractions of seconds, with a letter indicating the hemisphere (N, S, W, E) preceding the numbers. A single field separator character (_) separates the latitude and the longitude sub-fields.

In this example, the latitude and longitude of the last known position are N 68°28'43.9" and E 027°27'02.4", respectively.

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Position precision

The precision of the position given in the Position field.

The unit for the precision is always meters. The range of the field is 0…255 meters . Values more than 254 are always indicated with 255 in the field.

The precision is estimation calculated from multiple variables.

Note that this field is present only if the Position format is 2 (WGS-84 with precision) (cf. above)

In this example, the position precision has been 37 meters.

```
08.07.2003
_17:44:23
```
<u>Time stamp</u>

Date and time of the position given in the <u>Position</u> field. UTC (Universal Coordinated Time, or Greenwich Mean Time) is always used, so the receiving instrument needs to do a conversion to local time. A single field separator character (_) separates date and time sub-fields.

In this example, the position has been acquired on July 8th, 2003, at 17:44:23. The GPS receiver also provides the UTC time.

```
081km/h
```
<u>Speed</u>

Instrument's speed at the time when the position was acquired.

The last four characters indicate the units used for speed, while the remaining three are used for the numeric speed value. The possible numeric values are 0-999.

Currently, TWIG instruments do not support units other than kilometers per hour (km/h), so the receiving instrument needs to do the conversion to other units.

This field is omitted if the position source is **net**, as speed cannot be calculated from GSM network measurement data.

In this example, the instrument has been moving at the speed of 81 kilometers per hour.

```
114deg
```
<u>Heading</u>

Three digits and the string deg, indicating the compass direction of movement of the instrument at the time when the position was acquired.

This field is omitted if the position source is **net**, as heading cannot be calculated from GSM network measurement data.

In this example, instrument has been moving to the compass direction 114°, i.e. approximately Southeast.

The single field which follows is again specific to the !TRG command. Having identified the command as !TRG, the instrument which receives the message can interpret the field as <u>Data</u> with value "81". In this example, this value indicates that the speed of the instrument at the time of the exceeding of the speed limit was 81 km/h.

If data needed for a data field is unavailable, the field is commonly filled with hyphen characters (-, Unicode 0x2D). This is the case for the <u>Position</u>, <u>Time stamp</u>, <u>Speed</u> and <u>Heading</u> fields.

3.2. Reading an MPTP command

This document lists each MPTP command as a table, as follows:

Command		Part number		Mode		Battery level		Position source		Position format		Position		Time stamp		Speed		Heading	
4	1	5	1	4	1	4	1	3	1	1	1	24	1	19	1	7	1	6	1
!STA	_	01/01	_	norm	_	032%	_	gps	_	1	_	N60.26.54,3_ E022.17.37,1	_	11.07.2003 _09:57:46	_	142km/h	_	275deg	_

Status code		Status text		Additional text		Time of sending
3	1	0…15	1	0…30	1	19
009	_	Everything ok	_	On spot	_	11.07.2003 _09:58:03

As stated above, the exact set of fields appearing in an MPTP message depends on the command in question.

Fields, which are optional for a command and may be omitted, are listed in the table with **dark grey**. If the field to be omitted is the last field of the command, it can be simply left out along with the field separator character, which precedes it. However, omitting a field from the middle of a command requires retaining both field characters around it. There will then be two field separators next to each other with nothing between them.

The second row in the table lists the length of each field. In some cases, ranges such as 0…14 are given, in which case the length of the field can vary between the given values. Also the field separator characters can be found in the table.

An MPTP message should always be read from left to right, reading the value of a field (or its sub-fields) until a field separator character (underscore) is encountered. This is important as the fields often do not have a fixed length, and attempting to read a field in the message by relying on a certain offset may give undesired results. It should also be noted that, even for a field with zero characters, both field separator characters around it still need to be present.

> TWIG devices always stop reading a field when its maximum length is reached. Thus, care should be taken not to write too long fields in an MPTP message as the instrument will expect the next field to start directly after the assumed end of the previous field.

The exact meaning of each field, along with the typical actions taken on reception of the message, is given for each command in this document.

3.3. Reassembling a received MPTP command

A device receiving an MPTP command in several parts needs to store the parts in a buffer until all of them have been received. As soon as the full set (01/NN, 02/NN, … , NN/NN) is present, the command can be reassembled and processed.

Please note that depending on the GSM network used, the parts may not always arrive in the order in which they were sent. Moreover, some GSM networks may cause delays in delivering some parts, and losing parts altogether is not unheard of. These things are caused by the GSM network used and affect all short messages, not only MPTP messages. However, they need to be taken into account when reassembling the command.

TWIG instruments feature an internal buffer for storing the parts of an MPTP command and automatically perform the reassembly as soon as all parts have been received. Receiving another command of the same type clears the previous parts from the buffer.

3.4. Base64 encoding

Base64 encoding is used for converting 8-bit binary data blocks into 7-bit GSM characters. By doing this normal 7-bit SMS can be used for sending and receiving more data than if it would be in the normal semi-readable format.

Full specification for the Base64 Content-Transfer-Encoding can be found at
http://www.funet.fi/pub/doc/rfc/rfc1521.txt

3.5. Reference tables of MPTP commands and TWIG device versions

For table of MPTP commands and TWIG device versions that support them, see Section 6: Table of Supported MPTP Messages.

For table of persistent Setting IDs and TWIG device versions that support them, see Section 5: Table of Configuration Messages (CNF).

4. MPTP COMMANDS

This chapter lists each MPTP command, categorized according to their usage. For each command, the following information is given:

- Roles and purpose:

  First, the roles of the sender and the recipient of the command are given. **CS → MTT** indicates that the role of the sender is Central Station while that of the recipient is Mobile Telematics Terminal, and vice versa.

  A brief textual description of the purpose of the command follows the role information.

- Supported TWIG devices and software versions:

  For each TWIG device and respective software version, support for sending and/or reception of the command is indicated.

- Actions on sending and reception:

  The actions of the device on sending and reception of the command are given individually for each TWIG device.

- Command format:

  The format of each command is listed as a table, as described in section 3.2, with sample values for each field in the command. The table is followed by individual descriptions for each field.

The categorization of the commands is introduced in section 2.2.

4.1. Position reporting commands

Position reporting commands are used for requesting and transmitting position information as a one-time exchange, i.e. either by sending a request command which is then responded to by a single report command, or by manually sending an unrequested position report.

Timing or otherwise triggering position reports is called tracking. For more information, please refer to section 4.1.7.

4.1.1. Position request (?LOC)

CS → MTT

The position request command can be used by a Central Station to find out the position of a Mobile Telematics Terminal. The terminal responds by sending a position report.

Reception

Upon receiving a position request command a terminal should respond by sending a position report command, as described in section 4.1.2. There are some differences in actions taken between the various TWIG models.

- TWIG Protector:

Depending on the authorization of the Central Station which requested the position report, the response message may be sent automatically or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Latest software versions are capable interpreting the request more elaborately. The request may require the last known position to be sent – no matter how old it may be – or may require a fresh position to be acquired from the GPS before sending a report. Old software versions will generally always send the last known position.

Command format

Length: 4…6 characters

Command *	Action
4	1	1
?LOC	0

*) cf. section 3.1 for description of this field.

The <u>Action</u> field is described below. It may be omitted altogether.

Field	Description	Range
<u>Action</u>	Actions which the receiving terminal is requested to take:	0…2
	0: Send a report containing the terminal's **last known position**, even if it is old.	
	1: Attempt to acquire a fresh position fix. If this succeeds within a few minutes, send a report containing the **fresh position**. If not, send the **last known position** instead.	

4.1.2. Position request (?LON)

CS → MTT

The position request command can be used by a Central Station to find out the position of a Mobile Telematics Terminal. The terminal responds by sending a position report. Position based on TWIG Point Netloc hybrid location service

Reception

Upon receiving a position request command ?LON a terminal should respond by sending a position report command !LOC which position source is "net" and message including Position precision information. Position report command as described in section 4.1.3and report data fields are described in section 3.1

4.1.3. Position report (!LOC)

MTT → CS

The position report command is sent by a Mobile Telematics Terminal as a sole response to a position request command from a Central Station. If position request command was ?LON the mobile telematics terminal waits the location report from TWIG Point Netloc hybrid location service before responding to Central station.

Sending

- This command can only be sent as an automatic response to a position request.

Command format

Length: 87...151 characters

Command*		Part number*		Mode*		Battery level*		Position source*		Position format*		Position*		Time stamp*		Speed*		Heading*		Data
4	1	5	1	4	1	4	1	3	1	1	1	24	1	19	1	7	1	6	1	0…60
!LOC		01/01		norm		075%		gps		1		N60.26.54,3 E022.17.37,1		11.07.2003 09:57:46		005km/h		063deg		×

*) cf. section 3.1 for description of these fields.

The Data field is optional and can be omitted. Some TWIG instruments use it to hold textual information about the cause of failure when unable to acquire a position fix.

4.1.4. Position request (?LOU)

CS → MTT

The position request command can be used by a Central Station to find out the position of a Mobile Telematics Terminal. The terminal responds by sending a position report with position based on TWIG Point Netloc hybrid location.

Reception

Upon receiving a position request command ?LOU, the terminal should respond by sending a position report command in which position source is TWIG Point Netloc hybrid location. Position report command is described in section 4.1.5.

Command format

Length: 8…16 characters

Command*		Action		Beacon type datablock
4	1	1	1	4
?LOU	_	1	_	G,B,W,S,N

Field	Description	Range
Action	Actions which the receiving terminal is requested to take: 0: NOT AVAILABLE 1: Make a measurement with defined beacon types. After having received report from TWIG Point Netloc, terminal sends the updated Netloc position. 2: NOT AVAILABLE	0..2
Beacon type datablock	Wanted beacon types for hybrid location use. **G,B,W,S,N** (Field separated ',' . The order of datablock fields are freely selectable. Unwanted types can be left out e.g G,N)	G=GPS B=Bluethooth W=Wifi S=SRD

N= Cellular
network

4.1.5. Position report (!LOU)

MTT → CS

The position report command is sent by a Mobile Telematics Terminal as a sole response to a position request command ?LOU from a Central Station. Before sending the response, the Mobile Telematics Terminal, waits for location report from TWIG Point Netloc hybrid location service.

Sending

- This command can only be sent as an automatic response to a position request ?LOU

Command format

Length: 4…61 characters

Command		Battery level		Message timestamp		GPS data block
4	1	1…3	1	14	1	
!LOU	_	75	_	20180515100223	_	g,34,N68.12345,E27.23456,12,2,79,230

Field	Description	Range
Battery level	Indicating in % the battery level of the telematics device. If in charger then use '- ' character	-,0..100
Message timestamp	Message sending time.Format is YYYYMMDDhhmmss	

GPS data block fields are separated with "." (full stop). Above example

g,34,N68.12345,E27.23456,12,2,79,230

Field number (example)	Description	Range
1(g)	g= GPS datablock	
2 (34)	Timestamp offset in seconds between location and message sending	-2147483647.. 2147483647
3 (N68.12345,E27.23456)	Latitude and Longitude in decimal degrees	
4 (12)	Position precision in meters	
5 (2)	Altitude in meters (based on the information given in TWIG Point Site tool)	
6(79)	Speed in km/h. If speed is not available, field is omitted.	
7(230)	Degrees indicating the compass direction of device movement at the time when the position was acquired. If the information is not available, field is omitted.	

4.1.6. SRD Beacon reports

MTT → CS

The position report command can be added with information on SRD Beacons heard by TWIG device having SRD transceiver. The information can be added to the end of any MPTP message. The presence of such data is indicated in the position format information in the beginning of the message. C.F 3.1

Command format

Length: 87...151 characters

Command*		Part number*		Mode*		Battery level*		Position source*		Position format*		Position*		Time stamp*		Speed*		Heading*		Beacon Data
4	1	5	1	4	1	4	1	3	1	1	1	24	1	19	1	7	1	6	1	0…60
!LOC		01/01		norm		075%		gps		3		N60.26.54,3_ E022.17.37,1		11.07.2003_ 09:57:46		005km/h		063deg		ROOM1.5.-101.35.25_ ROOM3.5.-102.35.29

*) cf. section 3.1 for description of these fields.

The <u>Data</u> field includes beacon data if position format is 3. Some TWIG instruments use it also to hold textual information about the cause of failure when unable to acquire a position fix.

Beacon data in above example. Different fields within Beacon data is separated with "." (full stop):. Different Beacons are separated with"_" (underscore). Underscore ("_") must NOT be used in Beacon name.

ROOM1.5.-101.35.25_

Field number (example)	Description	Range
1(ROOM1)	Name of the Beacon. If no name is give the serial number will be transmitted	0…8
2 (5)	Beacon transmit level. 0=10dBm 1=7dBm 2=5dBm 3=0dBm 4=-10dBm 5=-20dBm 6=-30dBm Default 5 (-20dBm)	0..3
3 (-101)	Reception signal level in dBm	0..4
4 (35)	Battery voltage level 1/10V	0..2

| 5 (29) | Timestamp offset in seconds between beacon data received by TWIG and time of sending the data via MPTP | 0..4 |

4.1.7. **SRD Beacon report request (?LOB)**

CS → MTT

The SRD Beacon report request command can be used by a Central Station to read out the Beacons report of a Mobile Telematics Terminal memory. Information can used by the Indoor location estimation. The terminal responds by sending a Beacons report.

Command format

Length: 4 characters

Command*
4
?LOB

4.1.8. **SRD Beacon report (!LOB)**

MTT → CS

The Beacon report command is sent by a Mobile Telematics Terminal as a sole response to a Beacon report request command from a Central Station.

Sending

- ,TWIG Protector,TWIG Embody with Indoor options:

This command can only be sent as an automatic response to a Beacon report request

Command format

Length: 3...160 characters

Command*		1st Beacon data		2nd Beacon data		3th Beacon data		nth Beacon data
4	1	12…23	1	12…23	1	15…23		12…23
!LOB	_	ROOM1.5.-101.35.25	_	ROOM3.5.-102.35.29	_	Beacon3.5.-103.35.26	… …	Beacon3.5.-98.35.122

Different fields within Beacon data is separated with "." (full stop):. Different Beacons are separated with"_" (underscore). Underscore ("_") must NOT be used in Beacon name.

Beacon data fields is described in chapter 4.1.3

Mobile Telematics Terminal can store ten Beacon data in memory. Report command max length is 160characters and this define limits of Beacons quantity in report .

If Beacons data is not available device reply only a command !LOB

4.1.9. Position request (?POS)

CS → MTT

The position request command can be used by a Central Station to find out the position of a Mobile Telematics Terminal. The terminal responds by sending a position report in Google-maps link format.

Reception

Upon receiving a position request command ?POS a terminal should respond by sending a position report in Google-maps link format .

Example of the response message http://maps.google.com/maps?q=60.397075,23.178879

4.1.10. Position request (?PON)

CS → MTT

The position request command can be used by a Central Station to find out the position of a Mobile Telematics Terminal. The terminal responds by sending a position report in Google-maps link format. Position based on Netloc Cellular location service

Reception

Upon receiving a position request command ?PON a terminal should respond by sending a position report in Google-maps link format .

Example of the response message http://maps.google.com/maps?q=60.397075,23.178879

4.2. Tracking commands

Tracking is a function which enables monitoring a target's position and movement without having to specifically request it all the time. This is done by setting up a *tracking process* on a terminal to take care of automated sending of position information.

Tracking processes

A tracking process is defined by the following attributes:

- Start trigger:

  The tracking process is started when this condition is met.

  Typical start triggers include a specific time, entering or exiting an area, or raising the speed of the terminal above or dropping it below a limit. It may also be desirable to have a tracking process start as soon as it is created, in which case it has no start trigger.

- Interval:

  While running, the tracking process sends messages with position information at a specified interval. Such messages are called *tracking reports*. The first report is sent as soon as the start trigger condition is met.

  If needed, the GPS receiver may be automatically switched on at the specified interval to facilitate acquisition of a new position fix for each report.

- Stop trigger:

  The tracking process is stopped when this condition is met.

  Typical stop triggers include a specific number of reports having been sent, a specific duration of running having been reached, or reversing the trigger condition which started the process (e.g. re-entering an area earlier exited).

The Central Station can remotely set up a tracking process by sending a tracking request MPTP command. The Mobile Telematics Terminal receiving such a message should then start a new process with the triggers specified in the request. It is also possible to create a new process locally on the terminal itself without a Central Station requesting it.

Process groups

The number of tracking processes which can exist simultaneously on a Mobile Telematics Terminal is limited. To clarify this, process types have been divided into process groups. Process types within a group are mutually exclusive so that only one process from a group can exist at a time. An existing process within a group needs to be stopped before creating a new one.

Group I: Processes with <u>no</u> start triggers		Group II: Processes with start triggers	
<u>Simple tracking</u>:		<u>Complex tracking</u>:	
– interval in minutes	(4.2.1.1)	– area tracking	(4.2.1.6.1)
– interval in seconds	(4.2.1.2)		
<u>Complex tracking</u>:			
– stopping with report limit	(4.2.1.6.2)		
– stopping at time limit	(0)		
– stopping at date and time	(0)		
– endless tracking	(4.2.1.6.5)		

A tracking process which sends its position information over a data call instead of using MPTP commands exists totally independently of the above grouping and is not limited by it. The only tracking type utilising this method is real-time tracking.

Tracking of travel marks – waypoints or routes – are not relevant for this grouping.

4.2.1. Tracking requests from Central Station

Usually, a tracking process is remotely set up by a Central Station by sending an MPTP command. Any tracking reports generated by the process are then sent to the Central Station which created it.

It is also possible for the user of a Mobile Telematics Terminal to set up a tracking process on the terminal itself. In this case, the Central Station to which the tracking reports will be sent, needs to be specified. This feature is discussed in section 0.

4.2.1.1. Simple tracking request: interval, minutes (?TRC)

CS → MTT

The simple tracking request command is sent by a Central Station to make the receiving Mobile Telematics Terminal create and activate a tracking process with the following properties:

- <u>Start trigger</u>: None.

  The tracking process is started as soon as it is created.

- <u>Interval</u>

  The process will send tracking reports at the specified interval until the stop trigger condition is met. The interval is given in full minutes.

- <u>Stop trigger</u>: Number of reports.

  The tracking process is stopped when the specified number of reports have been sent.

If the interval needs to be given in seconds, use the command described in section 4.2.1.2 instead. For more complex tracking processes using different start and stop triggers, the complex tracking request described in section 4.2.1.6 needs to be used.

Reception

Upon receiving a simple tracking request command, the receiving instrument should create a new tracking process. There are some differences in actions taken between the various TWIG models.

- TWIG Locator,TWIG Protector:

    Depending on the authorization of the Central Station which sent the request, a new tracking process may be created or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

The newly created tracking process is activated at once. The report commands sent by it are described in section 4.2.3.1.

Command format

Length: 8…16 characters

Command *		Interval		Number of reports
4	1	1…5	1	1…5
?TRC		10		20

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Interval	Time between sending of tracking reports, in minutes.	1…65534 (mins)
Number of reports	Stop trigger condition: the tracking process is stopped when the specified number of reports have been sent.	1…65534

For information on how the receiving instrument interprets these parameters, cf. section 4.2.3.1.

4.2.1.2.   Simple Beacon tracking request : interval, minutes (?TRB)

CS → MTT

The simple Beacon tracking request command is sent by a Central Station to make the receiving Mobile Telematics Terminal create and activate a TWIG Beacon tracking process with the following properties:

- Start trigger: None.

    The Beacon tracking process is started as soon as it is created.

- Interval

    The process will send Beacon tracking reports at the specified interval until the stop trigger condition is met. The interval is given in full minutes.

- Stop trigger: Number of reports.

  The tracking process is stopped when the specified number of reports have been sent.

Reception

Upon receiving a simple tracking request command, the receiving instrument should create a new tracking process.

- TWIG Locator,TWIG Protector,TWIG Embody:

  Depending on the authorization of the Central Station which sent the request, a new tracking process may be created or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

The newly created tracking process is activated at once. The report commands sent by it are described in section 4.2.3.1.

Command format

Length: 8…16 characters

Command *		Interval		Number of reports
4	1	1…5	1	1…5
?TRB		10		20

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Interval	Time between sending of Beacon tracking reports, in minutes.	1…65534 (mins)
Number of reports	Stop trigger condition: the tracking process is stopped when the specified number of reports have been sent.	1…65534

4.2.1.3.   Simple Beacon tracking deactivation

CS → MTT

The simple Beacon tracking deactivation command is sent by a Central Station to make the receiving Mobile Telematics Terminal deactivate a tracking process created with the simple Beacon tracking request command ?TRB, described above.

Reception

Upon receiving a simple Beacon tracking deactivation command, the receiving instrument should deactivate the tracking process created with simple beacon tracking request

Command format

Length: 6 characters

Command*		Service state
4	1	1
?TRB	_	0

Service state	Activity of tracking process. Value 0 should be used; otherwise the process will not be deactivated.	0…1

4.2.1.4.   Simple tracking request: interval, seconds (?TRS)

CS → MTT

This command is nearly identical with the simple tracking command described in section 4.2.1.1 above. The only difference is that for this command, the interval for sending tracking reports is given in seconds instead of minutes.

Reception

This command is handled just as ?TRC; cf. section 4.2.1.1 above. The report commands sent by the process are described in section 0.

Command format

Length: 9…16 characters

Command*		Interval		Number of reports
4	1	2…5	1	1…5
?TRS		20		30

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
<u>Interval</u>	Time between sending of tracking reports, in seconds.	20…65534 (secs)
<u>Number of reports</u>	Stop trigger condition: the tracking process is stopped when the specified number of reports have been sent.	1…999*

*) excluding,TCP90 and TUP90 devices max number of reports are 65534

For information on how the receiving instrument interprets these parameters, cf. section 0.

4.2.1.5.   Simple tracking request: stopping interval tracking (?STO)

CS → MTT

The simple tracking stopping command is sent by a Central Station to make the receiving Mobile Telematics Terminal stop a tracking process created with either of the simple tracking request commands described above, ?TRC and ?TRS.

This command cannot be used for stopping a tracking process created with the complex tracking request described in section 4.2.1.6. For information on stopping such processes, cf. section 4.2.1.6.7.

Reception

Upon receiving a simple tracking stopping command, the receiving instrument should stop a tracking process created with either of the simple tracking requests (cf. sections 4.2.1.1 and 4.2.1.2). There are some differences in actions taken between the various TWIG models.

- <u>TWIG Locator, TWIG Protector, TWIG Embody</u>:

   Depending on the authorization of the Central Station which requested the stopping, the tracking process may be stopped at once or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

   Cf. section 4.2.1 for information on determining the recipient of the reports sent by a tracking process.

Command format

Length: 4 characters

Command*
4
?STO

*) cf. section 3.1 for description of this field.

4.2.1.6.   Complex tracking request (?TRG)

CS → MTT

Using the complex tracking request, tracking processes with a multitude of different kinds of start and stop trigger conditions can be created:

0.   <u>Area tracking</u>:

The tracking process sends reports of a Mobile Telematics Terminal's arrival to or departure from an area.

This type of tracking is described in detail in section 4.2.1.6.1.

1.   <u>Stopping at report limit</u>:

The tracking process sends reports at regular intervals until the specified number of reports have been sent. This process type is functionally identical to a simple tracking process, described in section 4.2.1.1.

This type of tracking is described in detail in section 4.2.1.6.2.

2.   <u>Stopping at time limit</u>:

The tracking process sends reports at regular intervals until has run for a specified time.

This type of tracking is described in detail in section 0.

3.   <u>Stopping at date and time</u>:

The tracking process sends reports at regular intervals until it is stopped at a specified date and time.

This type of tracking is described in detail in section 4.2.1.6.4.

4.   <u>NOT AVAILABLE</u>

5.   <u>NOT AVAILABLE</u>

6.   <u>NOT AVAILABLE</u>

7.   <u>Endless tracking</u>:

The tracking process sends reports at regular intervals indefinitely. It will only stop when requested.

This type of tracking is described in detail in section 4.2.1.6.5.

8.   <u>NOT AVAILABLE</u>

9.   <u>Anchor tracking:</u>

The tracking process sends reports of a Mobile Telematics Terminal's arrival to or departure from an area. Centre point of the area is got from the current point of the terminal when activating the process.

Each supported start/stop trigger combination is defined by a *trigger type* to which the numbering above refers. A complex tracking request MPTP command always starts in the same way, with the <u>Trigger type</u> parameter determining the format of the rest of the command.

Co mm and *	Tri gge r typ e		…
4	1	1…2	1	…
?TRG		0		…

*) cf. section 3.1 for description of this field.

Variations of the command are described in subsequent sections. References are given in the list above.

Previous versions of this document featured a uniform naming system for the fields in complex tracking requests. For backward reference, these field titles (Limit, Allowed value, Trigger special data, Data) are given alongside the trigger type specific names in the sections below.

4.2.1.6.1. Trigger type 0: area tracking

CS → MTT

An area tracking process is used for monitoring a Mobile Telematics Terminal's arrival to and departure from an area. The process can be created and activated by a Central Station, by sending a complex tracking request command with trigger type 0.

The tracked area is circular. It is defined by a centre point and a radius.

There are five different methods for tracking area events:

0. Report while outside the area:

   The tracking process sends reports while the Mobile Telematics Terminal is outside the area. The tracking process parameters are in this case as follows:

   - Start trigger: Departure from area.

   - Interval: Interval for sending reports while outside the area, in minutes.

   - Stop trigger: Arrival at area; i.e. reversing the start trigger condition.

1. Report while inside the area:

   The tracking process sends reports while the Mobile Telematics Terminal is inside the area. The tracking process parameters are in this case as follows:

   - Start trigger: Arrival at area.

   - Interval: Interval for sending reports while inside the area, in minutes.

   - Stop trigger: Departure from area; i.e. reversing the start trigger condition.

2. Report arrival:

   The tracking process sends a single report when the Mobile Telematics Terminal arrives at the area. The tracking process parameters are in this case as follows:

   - Start trigger: Arrival at area.

   - Interval: Only one report is sent. However, the interval set here is used in case the GPS needs to be switched on. Cf. below for more information.

   - Stop trigger: Immediate; the process is stopped as soon as the single report has been sent.

3. Report departure:

    The tracking process sends a single report when the Mobile Telematics Terminal departs from the area. The tracking process parameters are in this case as follows:

    - Start trigger: Departure from area.

    - Interval: Only one report is sent. However, the interval set here is used in case the GPS needs to be switched on. Cf. below for more information.

    - Stop trigger: Immediate; the process is stopped as soon as the single report has been sent.

4. Report arrival and departure:

    The tracking process sends a single report when the Mobile Telematics Terminal arrives to or departs from the area. The tracking process parameters are in this case as follows:

    - Start trigger: Arrival to or departure from area.

    - Interval: Only one report is sent. However, the interval set here is used in case the GPS needs to be switched on. Cf. below for more information.

    - Stop trigger: Immediate; the process is stopped as soon as the single report has been sent.

An area tracking process remains active even after its stop trigger condition has been met. It will be automatically restarted if the start trigger condition is met again. To deactivate a process so that it will not start again, use the command described in section 4.2.1.6.7.

Reception

Depending on the authorization of the Central Station which sent the request, a new tracking process may be created or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Command format

Length: 39…46 characters

Command *		Trigger type		Service state		Radius (Limit)		Method (Allowed value)		Area centre (Trigger special data)		Interval (Data)
4	1	1	1	1	1	1…4	1	1	1	24	1	1…5
?TRG		0		1		1000		0		N68.28.43,9_ E027.27.02,4		15

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of complex tracking request message, as defined in section 4.2.1.6. In this case, the trigger type number is 0.	0…9

<u>Service state</u>	Activity of tracking process. Value 1 should be used; otherwise the process will not be activated.	0…1
<u>Radius</u>	Radius of tracked area.	1…9999 (m)
<u>Method</u>	Method of area tracking, as described above:	0…4

    0:    report while outside the area
    1:    report while inside the area
    2:    report arrival
    3:    report departure
    4:    report arrival and departure

<u>Area centre</u>	Coordinates of centre point of the area, in WGS-84 format.	cf. field <u>Position</u> in section 3.1.
<u>Interval</u>	Time between sending of tracking reports, in minutes.	1…65534 (mins)

The value in this field is also used when the GPS receiver is off when the terminal receives the request. It defines the interval at which the GPS is automatically switched on for checking the instrument's position in relation to the tracked area. Thus, this parameter is also relevant for <u>Method</u>s 2, 3 and 4.

4.2.1.6.2. Trigger type 1: stopping at report limit

CS → MTT

A type 1 tracking process sends reports at regular intervals until a specified number of reports have been sent. Such a process can be created and activated by a Central Station, by sending a complex tracking request command with trigger type 1.

The tracking process has the following properties:

- <u>Start trigger</u>: None.

  The tracking process is started as soon as it is created.

- <u>Interval</u>

  The process will send tracking reports at the specified interval until the stop trigger condition is met. The interval is given in full minutes.

- <u>Stop trigger</u>: Number of reports.

  The tracking process is stopped when the specified number of reports have been sent.

A process just like one created with this command can also be created with a simple tracking request; cf. section 4.2.1.1. If the interval needs to be given in seconds, use the command described in section 4.2.1.2 instead.

Reception

Depending on the authorization of the Central Station which sent the request, a new tracking process may be created or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Command format

Length: 14…22 characters

Co mm and *		Tri gge r typ e		Ser vice stat e		Interva l (Limit)		Unuse d (Allowed value)		Number of reports (Trigger special data)
4	1	1	1	1	1	1…5	1	1	1	1…5
?TRG		1		1		30		0		20

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of complex tracking request message, as defined in section 4.2.1.6. In this case, the trigger type number is 1.	0…9
Service state	Activity of tracking process. Value 1 should be used; otherwise the process will not be activated.	0…1
Interval	Time between sending of tracking reports, in minutes.	1…65534 (min)
Unused	This field has been reserved for future use. For now, value 0 should be used.	0
Number of reports	Stop trigger condition: the tracking process is stopped when the specified number of reports have been sent.	1…999*

*) excludingTCP90 and TUP90 devices max number of reports are 65534

4.2.1.6.3.   Trigger type 2: stopping at time limit

CS → MTT

A type 2 tracking process sends reports at regular intervals for a specified time. Such a process can be created and activated by a Central Station, by sending a complex tracking request command with trigger type 2.

The tracking process has the following properties:

- Start trigger: None.

  The tracking process is started as soon as it is created.

- Interval

  The process will send tracking reports at the specified interval until the stop trigger condition is met. The interval is given in full minutes.

- Stop trigger: Time limit.

  The tracking process is stopped when it has been running for a specified time. The time limit is given in full minutes.

Reception

Depending on the authorization of the Central Station which sent the request, a new tracking process may be created or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Command format

Length: 14…22 characters

Command *		Trigger type		Service state		Interval (Limit)		Unused (Allowed value)		Time limit (Trigger special data)
4	1	1	1	1	1	1…5	1	1	1	1…5
?TRG		2		1		30		0		180

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of complex tracking request message, as defined in section 4.2.1.6. In this case, the trigger type number is 2.	0…9
Service state	Activity of tracking process. Value 1 should be used; otherwise the process will not be activated.	0…1
Interval	Time between sending of tracking reports, in minutes.	1…65534 (min)*
Unused	This field has been reserved for future use. For now, value 0 should be used.	0
Time limit	Stop trigger condition: the tracking process is stopped after it has been running for the time set in this field.	1…65534 (min)*

*)TCP90 and TUP90 devices define Interval and Time limit values so that the result of the calculation formula **Time limit : Interval = <10000**

4.2.1.6.4.   Trigger type 3: stopping at date and time

CS → MTT

A type 3 tracking process sends reports at regular intervals until a specified date and time is reached. Such a process can be created and activated by a Central Station, by sending a complex tracking request command with trigger type 3.

The tracking process has the following properties:

- Start trigger: None.

  The tracking process is started as soon as it is created.

- Interval

  The process will send tracking reports at the specified interval until the stop trigger condition is met. The interval is given in full minutes.

- Stop trigger: Date and time.

  The tracking process is stopped when the specified date and time is reached.

Reception

Depending on the authorization of the Central Station which sent the request, a new tracking process may be created or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Command format

Length: 25…29 characters

Command *		Trigger type		Service state		Interval (Limit)		Unused (Allowed value)		Stopping date and time (Trigger special data)
4	1	1	1	1	1	1…5	1	1	1	12
?TRG		3		1		30		0		051220002015

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of complex tracking request message, as defined in section 4.2.1.6. In this case, the trigger type number is 3.	0…9
Service state	Activity of tracking process. Value 1 should be used; otherwise the process will not be activated.	0…1

Interval	Time between sending of tracking reports, in minutes.	1…65534 (min)
Unused	This field has been reserved for future use. For now, value 0 should be used.	0
Stopping date and time	Stop trigger condition: the tracking process is stopped when the date and time in this field has passed. Time needs to be given in 24-hour format. UTC (Universal Coordinated Time, or Greenwich Mean Time) should be used.	date and time in format DDMM YYYYhhmm

4.2.1.6.5. Trigger type 7: endless tracking

CS → MTT

A type 7 tracking process sends reports at regular intervals. It does not ever stop automatically, but as any other process, can be deactivated with an MPTP command. Such a process can be created and activated by a Central Station, by sending a complex tracking request command with trigger type 7.

The tracking process has the following properties:

- Start trigger: None.

  The tracking process is started as soon as it is created.

- Interval

  The process will send tracking reports at the specified interval, given in full minutes.

- Stop trigger: None.

  The tracking process is never automatically stopped.

To deactivate the process, use the command described in section 4.2.1.6.7.

Reception

Depending on the authorization of the Central Station which sent the request, a new tracking process may be created or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Command format

Length: 10…14 characters

Command *		Trigger type		Service state		Interval (Limit)
4	1	1	1	1	1	1…5
?TRG		7		1		60

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
<u>Trigger type</u>	Trigger type of complex tracking request message, as defined in section 4.2.1.6. In this case, the trigger type number is 7.	0…9
<u>Service state</u>	Activity of tracking process. Value 1 should be used; otherwise the process will not be activated.	0…1
<u>Interval</u>	Time between sending of tracking reports, in minutes.	1…65534 (min)

4.2.1.6.6.   Trigger type 9: anchor tracking

CS → MTT

An anchor tracking process is used for monitoring a Mobile Telematics Terminal's departure from an area. The process can be created and activated by a Central Station, by sending a complex tracking request command with trigger type 9.

The tracked area is circular. It is defined by a centre point and a radius. The centre point is taken automatically from the current position of the device. Note that the current position can be old if the terminal has not been able to update it's position earlier.

Anchor tracking process is like circle area tracking but it will start Emergency process instead of tracking.

An anchor tracking process remains active even after its stop trigger condition has been met. It will be automatically restarted if the start trigger condition is met again. To deactivate a process so that it will not start again, use the command described in section 4.2.1.6.7.

Reception

Depending on the authorization of the Central Station which sent the request, a new tracking process may be created or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Command format

Length: 14…25 characters

Command*		Trigger type		Service state		Radius		Method		Interval
4	1	1	1	1	1	1…4	1	1	1	1
?TRG		9		1		1000	_	0	_	5

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of complex tracking request message, as defined in section 4.2.1.6. In this case, the trigger type number is 9.	0…9
Service state	Activity of tracking process. 0: De activate 1: Activate	0…2
Radius	Radius of tracked area.	1…9999 (m)
Method	Method of area tracking, as described above: 0: report while outside the area 1: report while inside the area 2: report arrival 3: report departure 4:report arrival and departure	0…4
Interval	Time between sending of tracking reports, in minutes.	1…65534 (min)

4.2.1.6.7.   Deactivating complex tracking

CS → MTT

The complex tracking deactivation command is sent by a Central Station to make the receiving Mobile Telematics Terminal deactivate a tracking process created with the complex tracking request command described above, ?TRG.

A process with any tracking trigger can be deactivated. The command can also be used for deactivating all complex tracking processes at once; for this, trigger type 99 can be used.

A tracking process created with either of the simple tracking requests (cf. sections 4.2.1.1 and 4.2.1.2) cannot be deactivated with this command. For information on deactivating such a process, cf. section 4.2.1.5.

Reception

Upon receiving a complex tracking deactivation command, the receiving instrument should stop the tracking process with the trigger type specified in the request. The process is totally deactivated, so it will not be restarted again even if its start trigger condition is met again. Specifying trigger type 99 deactivates all complex tracking processes at once.

Depending on the authorization of the Central Station which requested the stopping, the tracking process may be stopped at once or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Command format

Length: 8…9 characters

Command*		Trigger type		Service state
4	1	1…2	1	1
?TRG		0		0

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of tracking process to be deactivated, as defined in section 4.2.1.6. To deactivate all tracking processes at once from same recipient , trigger type 99 can be used.	0…9, 99
Service state	Activity of tracking process. Value 0 should be used; otherwise the process will not be deactivated.	0…1

4.2.1.7. Real time complex tracking request (?TRR)

CS → MTT

Using the real time complex tracking request, tracking processes with a multitude of different kinds of start and stop trigger conditions can be created:

0. Area tracking:

    For future extension.

1. Stopping at report limit:

    For future extension.

2. Stopping at time limit:

    For future extension.

3. Stopping at date and time:

    For future extension.

4. Speed tracking:

    For future extension.

5. Report at date and time:

    For future extension.

6. Polygonal area tracking:

    For future extension.

7. Endless tracking:

    The tracking process sends reports at regular intervals indefinitely. It will only stop when requested.

    This type of tracking is described in detail in section 4.2.1.7.1.

8. Not in use.

9. Anchor tracking:

    For future extension.

Each supported start/stop trigger combination is defined by a *trigger type* to which the numbering above refers. A complex tracking request MPTP command always starts in the same way, with the Trigger type parameter determining the format of the rest of the command.

Command *		Trigger type		…
4	1	1…2	1	…
?TRR		0		…

*) cf. section 3.1 for description of this field.

Variations of the command are described in subsequent sections. References are given in the list above.

Previous versions of this document featured a uniform naming system for the fields in complex tracking requests. For backward reference, these field titles (Limit, Allowed value, Trigger special data, Data) are given alongside the trigger type specific names in the sections below.

4.2.1.7.1.   Trigger type 7: endless tracking

CS → MTT

A type 7 tracking process sends reports at regular intervals. It does not ever stop automatically, but as any other process, can be deactivated with an MPTP command. Such a process can be created and activated by a Central Station, by sending a complex tracking request command with trigger type 7.

The tracking process has the following properties:

- Start trigger: None.

  The tracking process is started as soon as it is created.

- Interval

  The process will send tracking reports at the specified interval, given in seconds.

- Stop trigger: None.

  The tracking process is never automatically stopped.

To deactivate the process, use the command described in section 4.2.1.7.2.

Reception

Depending on the authorization of the Central Station which sent the request, a new tracking process may be created or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Command format

Length: 10…14 characters

Command *		Trigger type		Service state		Interval (Limit)
4	1	1	1	1	1	1…5
?TRR		7		1		60

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range

Trigger type	Trigger type of complex tracking request message, as defined in section 4.2.1.7. In this case, the trigger type number is 7.	0…9
Service state	Activity of tracking process. Value 1 send messages every interval regardless if it is updated. Option 2 sends position only if it has been updated.	0…2
Interval	Time between sending of tracking reports, in seconds.	5…65534 (sec)

4.2.1.7.2.   Deactivating real time complex tracking

CS → MTT

The real time complex tracking deactivation command is sent by a Central Station to make the receiving Mobile Telematics Terminal deactivate a tracking process created with the real time complex tracking request command described above, ?TRR.

A process with any tracking trigger can be deactivated. The command can also be used for deactivating all real time complex tracking processes at once; for this, trigger type 99 can be used.

Reception

Upon receiving a complex tracking deactivation command, the receiving instrument should stop the real time tracking process with the trigger type specified in the request. The process is totally deactivated, so it will not be restarted again even if its start trigger condition is met again. Specifying trigger type 99 deactivates all complex tracking processes at once.

Depending on the authorization of the Central Station which requested the stopping, the tracking process may be stopped at once or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Command format

Length: 8…9 characters

Command *		Trigger type		Service state
4	1	1…2	1	1
?TRR		0		0

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range

<u>Trigger type</u>	Trigger type of tracking process to be deactivated, as defined in section 4.2.1.7.	0…9, 99
	To deactivate all tracking processes at once, trigger type 99 can be used.	
<u>Service state</u>	Activity of tracking process. Value 0 should be used; otherwise the process will not be deactivated.	0…1

4.2.2. **Complex tracking request (?TRU)**

CS → MTT

Using of the complex tracking request ?TRU enables creation of tracking processes with all kinds of start and stop trigger conditions. By now only trigger 7 has been implemented. Device needs to be connected to TWIG Point Netloc service.

0. <u>NOT AVAILABLE</u>
1. <u>NOT AVAILABLE</u>
2. <u>NOT AVAILABLE</u>
3. <u>NOT AVAILABLE</u>
4. <u>NOT AVAILABLE</u>
5. <u>NOT AVAILABLE</u>
6. <u>NOT AVAILABLE</u>
7. <u>Endless tracking</u>:

   The tracking process sends reports at regular intervals indefinitely. Location is based on the hybrid location.

   This type of tracking is described in detail in section 4.2.1.6.5.

8. <u>NOT AVAILABLE</u>
9. <u>NOT AVAILABLE</u>

Each supported start/stop trigger combination is defined by a *trigger type* to which the numbering above refers. A complex tracking request MPTP command always starts in the same way, with the <u>Trigger type</u> parameter determining the format of the rest of the command. The variants used for beacon type datablock define the beacon types reported to the TWIG Point. At a moment only trigger 7 is available.

Tracking will only stop when requested with command ?TRU_7_0.

Command		Trigger type		Service state		Interval		Beacon type datablock
4	1	1…2	1	1	1	2	1	
?TRU	_	7	_	1	_	5	_	G,B,W,S,N

Field	Description	Range
<u>Trigger type</u>	Trigger type of complex tracking request message, as defined in section 4.2.1.6. In this case, the trigger type number is 7.	0…9, 99
<u>Service state</u>	Activity of tracking process. 0: Deactivate 1: Activate	0..1
<u>Interval</u>	Time between sent tracking reports, in minutes.	1..59
<u>Beacon type datablock</u>	Wanted beacon types for hybrid location use. **G,B,W,S,N** (Field separated ',' . The order of datablock fields are freely selectable)	G=GPS B=Bluethooth W=Wifi N= Cellular network

<u>Example of activation message for 5 min interval tracking : ?TRU_7_1_5_G,B,W,S,N</u>

4.2.2.1.   Complex Beacon area tracking (?TRE)

CS → MTT

An area tracking process is used for monitoring a Mobile Telematics Terminal's arrival to an certain Beacon area. The process can be created and activated by a Central Station, by sending a complex Beacon tracking request command with trigger type 0.

Command format

Length: 39…46 characters

Command *		Trigger type		Service state		Radius (Limit)		Method (Allowed value)		Substring		Interval (Data)
4	1	1	1	1	1	1…4	1	1	1	24	1	1…5
?TRE		0		1		300		2		Beacon		5

*) cf. section 3.1 for description of this field.

Field	Description	Range

Trigger type	Trigger type of complex tracking request message, as defined in section 4.2.1.6. In this case, the only supported trigger type number is 0.	0…9
Service state	Activity of tracking process. Value 1 should be used; otherwise the process will not be activated.	0…1
Radius	Radius of tracked area. **Not in use**	1…9999 (m)
Method	Method of area tracking, as described above:	0…4

      0:     report while outside the area **Not in use**

      1:     report while inside the area **Not in use**

      2:     report arrival

      3:     report departure **Not in use**

      4:     report arrival and departure **Not in use**

| Substring | the text string that is searched for the received Beacon data | |
| Interval | Time between checking if the any "matching Beacon" signal still received. If not then there can generated new Complex Beacon area tracking message. | 1…65534 (mins) |

4.2.2.1.1.   Deactivating complex Beacon area tracking

CS → MTT

The complex beacon area tracking deactivation command is sent by a Central Station to make the receiving Mobile Telematics Terminal deactivate the tracking process created with the complex beacon are a tracking request command described above, ?TRE.

Reception

Upon receiving a complex beacon area tracking deactivation command, the receiving instrument should stop the tracking process with the trigger type specified in the request. The process is totally deactivated, so it will not be restarted again even if its start trigger condition is met again..

Depending on the authorization of the Central Station which requested the stopping, the tracking process may be stopped at once or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Command format

Length: 8…9 characters

Command*		Trigger type		Service state
4	1	1…2	1	1
?TRE		0		0

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of tracking process to be deactivated, as defined in section 4.2.1.6. At the moment only trigger type 0 is in use	0…9, 99
Service state	Activity of tracking process. Value 0 should be used; otherwise the process will not be deactivated.	0…1

4.2.3. Tracking reports

A tracking process will always send one or more tracking reports when it has been started. The type of report sent depends on process:

- Simple process, interval in minutes (!TRC):

    The report described in section 4.2.3.1 is used. Cf. section 4.2.1.1 for information on how this kind of a process is created.

- Simple process, interval in seconds (!TRS):

    The report described in section 0 is used. Cf. section 4.2.1.2 for information on how this kind of a process is created.

- Complex process (!TRG):

    The report described in section 4.2.3.5 is used. Cf. section 4.2.1.6 for information on how these kinds of processes can be created.

- Complex process (!TRU):

    The report described in section 4.2.3.5 is used. Cf. section 4.2.1.6 for information on how these kinds of processes can be created.

    Complex Beacon area (!TRE)

    The report described in section 4.2.3.5 is used. Cf. section 4.2.1.6 for information on how these kinds of processes can be created.

The various report types are described in the sections below.

4.2.3.1.   Simple report: interval tracking, minutes (!TRC)

MTT → CS

These tracking report commands are sent by a simple tracking process, with interval given in minutes, running on a Mobile Telematics Terminal. The tracking process can be remotely set up by using the command described in section 4.2.1.1.

Sending

- TWIG Locator,TWIG Protector,TWIG EMbody:

    This command can be sent by a tracking process remotely set up by a Central Station. Cf. section 4.2.1.1 for more information.

Command format

Length: 90...104 characters

Command*		Part number*		Trigger type		Service state		Mode*		Batterylevel*		Positionsource*		Positionformat*		Position*		Timestamp*	
4	1	5	1	1	1	1	1	4	1	4	1	3	1	1	1	24	1	19	1
!TRC		01/01		1		1		norm		075%		gps		1		N68.28.43,9 E027.27.02,4		20.10.2003 14:37:09	

Speed*		Heading*		Message number
7	1	6	1	3…9
142km/h		114deg		3/10

*) cf. section 3.1 for description of these fields.

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of the tracking process. As the simple tracking process is essentially identical to a complex tracking process with trigger type 1, the value 1 is used here.	0…9
Service state	Activity of tracking process. Value 1 should be used, as the tracking process is active.	0…1

Message number	The message number of the report and the total number of messages to be expected. The first number is the message's order number and the number after the slash character is the total number of messages to be expected.	0000….9999 / 0000….9999
	If the message order number or total number of messages becomes more than 9999, 0000 is used in the field.	
	If the total number of messages cannot be calculated 0000 is used in the field. This case happens with tracking which does not have stop trigger.	

4.2.3.2.   Simple Beacon report:interval tracking,minutes (!TRB)

MTT → CS

These tracking report commands are sent by a simple tracking process, with interval given in minutes, running on a Mobile Telematics Terminal. The tracking process can be remotely set up by using the command described in section 4.2.1.1.

Sending

- TWIG Locator,TWIG Protector,TWIG Embody:

    This command can be sent by a tracking process remotely set up by a Central Station. Cf. section 4.2.1.1 for more information.

Command format

Length: 8...160 characters

Command *		Message number		1st Beacon data		2nd Beacon data		3rd Beacon data		4th Beacon data
4	1	3…9	1	12..23	1	12..23	1	12..23	1	12..23
!TRB		1/2	_	ROOM1.5.-101.35.25	_	01215691.5.-101.35.25	_	HALL1.5.-98.35.200	_	Beacon1.5.-101.35.9999

The special fields of the command are as follows:

Field	Description	Range

<u>Message number</u>	The message number of the report and the total number of messages to be expected. The first number is the message's order number and the number after the slash character is the total number of messages to be expected.	0000….9999 / 0000….9999
	If the message order number or total number of messages becomes more than 9999, 0000 is used in the field.	
	If the total number of messages cannot be calculated 0000 is used in the field. This case happens with tracking which does not have stop trigger.	
Beacon data	Beacon data fields is described in chapter 4.1.3	12…23 character

Different fields within Beacon data is separated with "." (full stop):. Different Beacons are separated with"_" (underscore). Underscore ("_") must NOT be used in Beacon name.

Mobile Telematics Terminal can store ten Beacons data in memory. Report command max length is 160characters. Beacons datafield length define the limits of Beacons quantity in the report.

If Beacon data is not available then Mobile Telematics Terminal reply only command with message number like !TRB_1/2

4.2.3.3. Complex Beacon area tracking report (!TRE)

MTT → CS

This tracking report command is sent by a complex beacon area tracking process running on a Mobile Telematics Terminal. Report sent when received Beacon data contains the string to be searched for. .

Command format

Length: 8...160 characters

Command*		Part number*		Trigger type		Service state		Mode		Message number		1st Beacon data		2nd Beacon data		3rd Beacon data	
4	1	5	1	1	1	1	1	4	1	3..9	1	3	1	1	1	24	1
!TRE	_	01/01	_	0	_	1	_	norm	_	1/0	_	ROOM1.5.-101.35.0	_	0121.5691.5.-101.35.25	_	HALL1.5.-98.35.200	_

Field	Description	Range
Trigger type	Trigger type of the tracking process, the value 0 is used here.	0
Service state	Activity of tracking process. Value 1 should be used, as the tracking process is active	1
Mode	A four-character string identifying the mode the instrument is in: **norm** for normal mode.	
Message number	The message number of the report and the total number of messages to be expected. The first number is the message's order number and the number after the slash character is the total number of messages to be expected. If the message order number or total number of messages becomes more than 9999, 0000 is used in the field. If the total number of messages cannot be calculated 0000 is used in the field. This case happens with tracking which does not have stop trigger.	0000….9999 / 0000….9999
Beacon data	Beacon data fields is described in chapter 4.1.3	12…23 character

….

Different fields within Beacon data is separated with "." (full stop):. Different Beacons are separated with"_" (underscore). Underscore ("_") must NOT be used in Beacon name.

Mobile Telematics Terminal can store ten Beacons data in memory. Report command max length is 160characters. Beacons datafield length define the limits of Beacons quantity in the report.

4.2.3.4. Simple report: interval tracking, seconds (!TRS)

MTT → CS

These tracking report commands are sent by a simple tracking process, with interval given in seconds, running on a Mobile Telematics Terminal. The tracking process can be remotely set up by using the command described in section 4.2.1.2.

This command is essentially identical to the simple tracking report with interval in minutes – cf. section 4.2.3.1 – except that the <u>Command</u> field holds the string **!TRS** instead of !TRC.

Command format

Length: 90...104 characters

Command*		Part number*		Trigger type		Service state		Mode*		Battery level*		Position source*		Position format*		Position*		Time stamp*	
4	1	5	1	1	1	1	1	4	1	4	1	3	1	1	1	24	1	19	1
!TRS		01/01		1		1		norm		075%		gps		1		N68.28.43,9 E027.27.02,4		20.10.2003 14:37:09	

Speed*		Heading*		Message number
7	1	6	1	3…9
142km/h		114deg		3/10

*) cf. section 3.1 for description of these fields.

For descriptions of the special fields, cf. section 4.2.3.1.

4.2.3.5. Complex report: tracking triggers (!TRG)

MTT → CS

This tracking report command is sent by a complex tracking process running on a Mobile Telematics Terminal. The tracking process, with any of the trigger types, can be set up remotely (cf. section 4.2.1.6). Different trigger types can have somehow different reports.

Sending

This command can be sent by a complex tracking process. Cf. section 4.2.1.6 for more information.

Reception

- Twig Hunter:

  Upon receiving a tracking report command, Twig Hunter will notify the user and update the position it has stored for the terminal which sent the report.

Command format

Trigger types 0 and 9

Length: 92...110 characters

Command*		Part number*		Trigger type		Service state		Mode*		Battery level*		Position source*		Position format*		Position*		Time stamp*	
4	1	5	1	1	1	1	1	4	1	4	1	3	1	1	1	24	1	19	1
!TRG	_	01/01	_	0	_	1	_	norm	_	075%	_	gps	_	1	_	N68.28.43,9 E027.27.02,4	_	20.10.2003 14:37:09	_

Speed*		Heading*		Current distance		Message number
7	1	6	1	1…5	1	3…9
081km/h	_	114deg	_	541	_	3/10

Trigger types 1, 2, 3, 5, 6 and 7

Length: 90...104 characters

Command*		Part number*		Trigger type		Service state		Mode*		Battery level*		Position source*		Position format*		Position*		Time stamp*	
4	1	5	1	1	1	1	1	4	1	4	1	3	1	1	1	24	1	19	1
!TRG		01/01		1		1		norm		075%		gps		1		N68.28.43,9 E027.27.02,4		20.10.2003 14:37:09	

Speed*		Heading*		Message number	
7	1	6	1	3…9	
081km/h		114deg		3/10	

Trigger type 4

Length: 92...108 characters

Command*		Part number*		Trigger type		Service state		Mode*		Battery level*		Position source*		Position format*		Position*		Time stamp*	
4	1	5	1	1	1	1	1	4	1	4	1	3	1	1	1	24	1	19	1
!TRG		01/01		4		1		norm		075%		gps		1		N68.28.43,9 E027.27.02,4		20.10.2003 14:37:09	

Speed*		Headi ng*		Curre nt speed		Messa ge numbe r
7	1	6	1	1…3	1	3…9
081km/h		114deg		81		3/10

*) cf. section 3.1 for description of these fields.

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of the tracking process, which sent the report. Cf. section 4.2.1.6.	0…9
Service state	Activity of tracking process. Value 1 should be used, as the tracking process is active.	0…1
Current distance	For an area and anchor tracking processes (trigger types 0 and 9), this field holds the current distance of the terminal from the centre point of the area, in meters.	0…65534 (m)
Current speed	For a speed tracking process (trigger type 4), this field holds the current speed of the terminal, in kilometers per hour.	0…999 (km/h)
Message number	The message number of the report and the total number of messages to be expected. The first number is the message's order number and the number after the slash character is the total number of messages to be expected.

If the message order number or total number of messages becomes more than 9999, 0000 is used in the field.

If the total number of messages cannot be calculated 0000 is used in the field. This case happens with tracking which does not have stop trigger. | 0000….9999 / 0000….9999 |

For locally set up complex tracking processes, the Command field can be changed to hold **!TRI** instead of !TRG to indicate the local origin of the process. This is done in all versions of Track Pro. Otherwise, the command is formatted as described above.

4.2.3.6.   Real time complex report: tracking triggers (!TRR)

MTT → CS

This tracking report command is sent by a real time complex tracking process running on a Mobile Telematics Terminal. The tracking process, with any of the trigger types, can either be set up remotely (cf. section 4.2.1.7). Different trigger types can have somehow different reports.

Sending

This command can be sent by a real time complex tracking process. Cf. section 4.2.1.7 for more information.

Command format

Trigger type 7

Length: 90...104 characters

Command*		Part number*		Trigger type		Service state		Mode*		Battery level*		Position source*		Position format*		Position*		Time stamp*	
4	1	5	1	1	1	1	1	4	1	4	1	3	1	1	1	24	1	19	1
!TRR		01/01		1		1		norm		075%		gps		1		N68.28.43,9 E027.27.02,4		20.10.2003 14:37:09	

Speed*		Heading*		Message number	
7	1	6	1	3…9	
081km/h		114deg		3/10	

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of the tracking process, which sent the report. Cf. section 4.2.1.6.	7
Service state	Activity of tracking process. Value 1 should be used, as the tracking process is active.	0…1
Current speed	For a speed tracking process (trigger type 4), this field holds the current speed of the terminal, in kilometers per hour.	0…999 (km/h)
Message number	The message number of the report and the total number of messages to be expected. The first number is the message's order number and the number after the slash	0000….9999 / 0000….9999

character is the total number of messages to be expected.

If the message order number or total number of messages becomes more than 9999, 0000 is used in the field.

If the total number of messages cannot be calculated 0000 is used in the field. This case happens with tracking which does not have stop trigger.

4.2.3.7. Complex report: tracking triggers (!TRU)

MTT → CS

This tracking report command is sent by a complex tracking process running on a Mobile Telematics Terminal. The tracking process, with any of the trigger types, can be set up remotely (cf. section 4.2.1.6).

Sending

This command can be sent by a complex tracking process. Cf. section 4.2.1.6 for more information

Command Format

Trigger type 7

Length: 90...104 characters

Command*		Battery level		Sending time		Trigger type		Message number		GPS datablocks
4	1	1	1	1	1	1	1	4	1	4
!TRU	_	75	_	20180515100223	_	7	_	01/100	_	g,34,N68.12345,E27.23456,12,2,79,230

Field	Description	Range
Battery level	Battery capacity in percent . When connected to charger used '-'	-, 0…100
Message sending time	Message Sending time in UTC time Time format is YearMonthDayHourMinuteSeconds like above example sending time is15th of Aug 10:02:23	14 character

Trigger type	Trigger type of the tracking process, which sent the report. Cf. section 4.2.1.6	0…7
GPS data block	Location information	
	Format describe below	

GPS data block format is described in section 4.1.5

4.3. Condition check commands

Condition check is a function which enables monitoring a target's condition without having to specifically request it by sending MPTP commands or making phone calls all the time. This is done by setting up a *condition check process* on a terminal to take care of presenting queries which the user of the monitored terminal must confirm.

The terminal will report to a Central Station based on the user's response to a query, or lack thereof. The query may simply require the user to press a key to confirm it. Entering a secret passcode may also be required.

Note that all modes and processes may not be supported by all instruments and versions

Condition check processes

A condition check process is defined by the following attributes:

1. Interval:

   While running, the condition check process presents queries to the user at a specified interval.

2. Query style:

   The style of a query determines whether it is be confirmed simply by pressing a key, or whether entering a passcode is required. It also specifies the conditions for sending a report.

   The available query styles are described below.

3. Stop trigger:

   The condition check process stops presenting queries when this condition is met.

   Typical stop triggers include a specific number of queries having been presented, a specific duration of running or date and time having been reached.

A condition check process can be remotely set up by the Central Station by sending a condition check request MPTP command. The Mobile Telematics Terminal receiving such a message should then start a new process with the parameters specified in the request. It is also possible to create a new process locally on the terminal itself without a Central Station requesting it.

The report command sent by a condition check process is described in section 4.3.1.

Only one condition check process can exist on a Mobile Telematics Terminal at any time. An existing process needs to be stopped before creating a new one.

4.3.1. Condition check report (!CIN)

MTT → CS

The condition check report command sent when condition check process activated/deactivated on a Mobile Telematics Terminal. The condition check process, with any of the trigger types, can either be set up locally or in interactive mode. Interactive mode (CND) must be acknowledged. The same kind of report is used for all trigger types.

Sending

This command can be sent by a condition check process. Cf. section 4.3 for more information.

Command format

Length: 94...111 characters

Command*		Part number*		Trigger type		Interval		Service state		Mode		Battery level*		Position source*		Position format*		Position*		Time stamp*	
4	1	5	1	1	1	1…5	1	1	1	4	1	4	1	3	1	1	1	24	1	19	1
!CIN		01/01		0		30		1		norm		075%		gps		1		N68.28.43,9 E027.27.02,4		28.10.2003 14:36:35	

Speed*		Heading*		Queries missed		Passcode	
7	1	6	1	1…5	1	0…4	
081km/h		114deg		1		8725	

*) cf. section 3.1 for description of these fields.

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of the condition check process which sent the report. Currently only 0.	0…3

Interval	Query interval of the process which sent the report, in full minutes.	0…65536 (min)
Service state	Condition check process current state.	0= Deactive
		1=Active
Mode	Reason for sending the report:	norm
	norm: the user confirmed the query	
Queries missed	Number of queries the user has failed to confirm within the 45-second period.	0…65535
	This counter is reset whenever a query is properly confirmed.	
	Currently only 0	
Passcode	Passcode entered into the query by the user.	0…4 chars
	The code is not verified locally. Any verification needs to be done based on this field by the Central Station.	
	This field is omitted if the query which caused sending the report did not require a code, or if the user failed to enter one.	
	Currently not used. Defaults to 0	

4.3.2. Condition check request command (!CND)

MTT → CS

The condition check permission request message is sent in Interactive mode once user want activate/deactivate condition check process. . !CND must be acknowledged.

Sending

This command can be sent by a condition check process. Cf. section 4.3 for more information.

Command format

Length: 14...24 characters

Command*		Trigger type		Service state		Interval		Queries missed		Passcode
4	1	1	1	1	1	1…5	1	1…5	1	1…4
!CND	_	0	_	1	_	30	_	0	_	0

*) cf. section 3.1 for description of these fields.

The special fields of the command are as follows:

Field	Description	Range
Trigger type	Trigger type of the condition check process which sent the report. **Currently only 0.**	0…3
Service state	Requested Condition Check service state.	0=Deactivated 1=Activated
Interval	Query interval of the process which sent the report, in full minutes. If requested deactivation then value is 0	1…65536 (min)
Queries missed	Number of queries the user has failed to confirm within the 45-second period. This counter is reset whenever a query is properly confirmed. **Currently not used only 0**	0…65535
Passcode	Passcode entered into the query by the user. The code is not verified locally. Any verification needs to be done based on this field by the Central Station. This field is omitted if the query which caused sending the report did not require a code, or if the user failed to enter one. **Currently not used. Defaults to 0**	0…4 chars

4.3.3. **Acknowledgement to condition check permission request**

CS → MTT

This command is used to acknowledge the condition check permission request sent by the mobile telematics terminal user. If interactive mode is used Condition check will not be activated or time extended without ACK from Control Center.

Command format

Length: 12 characters

Command *		Approval		Request command		Trigger type
4	1	1	1	3	1	1
?ACK	_	1	_	CND	_	1

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Approval	The approval of the control center:	0…1
	0: Condition check deactivated **approved**	
	1: Condition check activated **approved**	
	If the condition check request was not approved the process continues without any changes.	
Request command	Identifies the process to which the acknowledgement should affect. In case of condition check process this is always CND.	CND
Trigger type	Trigger type of the process to which the acknowledgement should affect.	0…3
	0: endless queries	
	1: stopping at query limit. **Not in use**	
	2: stopping at time limit. **Not in use**	
	3: stopping at date and time. **Not in use**	

For more information about different condition check processes cf. 4.3.

4.4. Emergency cycle commands

The *emergency cycle* is an automated sequence of actions designed to make reporting an emergency situation as simple and effective as possible. When the cycle is started – typically by pressing the emergency key – the Mobile Telematics Terminal will start making emergency calls and sending emergency reports containing position information. The way in which this is done is highly configurable.

Starting the emergency cycle

The emergency cycle is started when the user of a Mobile Telematics Terminal presses the emergency key of the instrument. It may also be initiated by other events such as an alarm from an external verticality sensor..

There may be a *cancellation period* at the start of the emergency cycle. During it, the user may cancel the cycle before any reports have been sent or calls made. If the cycle was initiated by an external event such as the verticality sensor, the cycle may also be cancelled at this time by normalising the status of the sensor (e.g. returning the verticality sensor to upright position.

The emergency cycle can be performed so that there are minimal indications on the display for its running. The sounds made by the terminal are also configurable. These features can e.g. reduce the risk of an assailant noticing the activity.

Making calls and sending reports

After the cancellation period – if any – the terminal will start making calls and sending reports. There can be several different phone numbers for making the emergency calls and sending the emergency messages. Cf. section4.6.9 **Error! Reference source not found.** for configuring the emergency numbers.

The order in which emergency calls are made and reports sent is configurable

- All reports before calls:

  Emergency reports are sent to all specified recipients as soon as the emergency cycle starts. Simultaneously, an emergency call is initiated to the first emergency call number. If there is no answer, the rest of the numbers will be tried in order.

- Reports and calls in pairs:

  Emergency reports are sent and calls are made in pairs. First, a report is sent to the first emergency report number, and a call is made to the first emergency call number. If the called number does not answer, the sequence continues with the next number by sending a report and making a call. This is continued until there is an answer.

Hands-free functionality can be programmed to be used by default for the calls. They can also be configured so that the recipient of the call can listen to the terminal but the terminal itself makes no sounds. These features can further increase the safety of the user..

The phone number being called can be masked with arbitrary text.(Not supported TWIG Protector)

Ending the emergency cycle

Making emergency calls is ended as soon as one of the numbers answers.

Sending reports also usually ends when a call is answered. However, if the terminal has been programmed to expect confirmation for the emergency reports, it will keep sending the reports to all recipients at a programmed interval until a confirmation is received.. Please note that the resending functionality described above only works if the order of calls and messages has been configured to Reports and call in pairs, cf. above.

The terminal may be configured to retain some of its emergency functionality even after the emergency cycle has ended. This is called *post-emergency mode*. In this mode, the emergency numbers are treated as authorized – cf. section 2.1.3 – and the terminal keeps using the sound settings used in emergency. This feature is only available in Seraph

4.4.1. Emergency report with text (!EMG)

MTT → CS

This emergency report command may be sent by a Mobile Telematics Terminal during the emergency cycle. It may contain some predefined text in addition to position information.

Sending

This command may be automatically sent during the emergency cycle.

Command format

Length: 87...151 characters

Command*		Part number*		Mode		Battery level*		Position source*		Position format*		Position*		Time stamp*		Speed*		Heading*		Text
4	1	5	1	4	1	4	1	3	1	1	1	24	1	19	1	7	1	6	1	0...60
!EMG		01/01		emer		075%		gps		1		N60.26.54,3_E 022.17.37,1		11.07.2003_ 09:57:46		005km/h		063deg		×

*) cf. section 3.1 for description of these fields.

The special fields of the command are as follows:

Field	Description	Range
Mode	Cf. section 3.1 for description of this field. Since this is an emergency report, this field usually contains the string 'emer'. TWIG SOS application may have a test mode and if that is used them this field contains string 'test'.	'emer' or 'test'

<u>Text</u>	Predefined text to be sent with the emergency report.	string of 0…60 chars
	TUP90EU (code 1…3) and TUP91EU (code 1…15) add status code after Predefined ManDown alert text .	
	code ManDown alert trigger	
	1 = No Movement	
	2 = Tilt angle	
	3 = No Movement Tilt angle	
	4= Freefall	
	5 = No Movement	Freefall	
	6 = Freefall	Tilt angle	
	7= No Movement	Freefall	Tilt angle	
	8 = Impact	
	9 = Impact	No Movement	
	10 = Impact |Tilt angle	
	11 = Impact	Tilt angle	No Movement	
	12 = Impact	Freefall	
	13 = Impact	Freefall	No Movement	
	14 = Impact	Freefall	Tilt angle	
	15 = Impact	Freefall	Tilt angle| No Movement	

4.4.2.   Emergency universal report (!EMU)

MTT → CS

This emergency report command may be sent by a Mobile Telematics Terminal during the emergency

cycle when device SOS event list there is event which type is "SMS MPTP universal location" ..

Sending

This command may be automatically sent during the emergency cycle. Command may be send twice if device receive new position information from Netloc hybrid location service during the sos cycle. These case second command position timestamp is same as first command.

Command*		Battery level*		Message sending time		GPS datablock		Emergency data block
4	1	1..3	1	14	1		1	2...62
!EMU	_	75	_	20180713095938	_	g,15,N60.394970,E023 .128355,12,2,,	_	e,SOSB UTTON

Field	Description	Range
Battery level	Battery capacity in percent . When connected to charger used '-'	-, 0…100
Message sending time	Message Sending time in UTC time Time format is YYYYMMDDhhmmss like above example sending time is13th of July 09:59:38	14 character
GPS data block	Location information Format describe below	
Emergency data block	Format is 'e,Text' . Text described chapter 4.4.1	2..62 character

GPS data block format is described in section 4.1.5

4.4.3. Emergency confirmation (?EMG)

CS → MTT

The emergency confirmation command is sent by a Central Station to let the user of the receiving Mobile Telematics Terminal know that an emergency report sent by it has been received, and also to make the terminal stop sending more reports.

Reception

Upon receiving an emergency confirmation command, the receiving instrument should stop sending any more emergency report messages to the group which sent the confirmation. It should also notify the user of the terminal.

Confirmation commands from unauthorized numbers are discarded upon reception and do not cause any actions. Also if confirmation is received at the time when TWIG SOS application is not active it should not cause any actions. Cf. section 2.1.3 for more information.

Command format

Length: 4 characters

Comman d*
4
?EMG

*) cf. section 3.1 for description of this field.

4.4.4. Acknowledgement to Post Emergency mode closing

CS → MTT

This command is used to the closing Post Emergency mode OTA otherwise user need to close post emergency mode with device END key.

Command format

Length: 12 characters

Co mm and *		Appro val		Reque st comm and
4	1	1	1	3
?ACK		1		PEM

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Approval	The approval of the control center:	0…1
	0: Post Emergency mode **not closed**	
	1: Post Emergency mode **closed**	
	If the post emergency mode not closed with this command then user have to close mode with device END key. New TWIG SOS can't be triggered before Post Emergency mode is closed	
Request command	Identifies the process to which the acknowledgement should affect. In case of post emergency process this is always PEM.	PEM

4.5. Status and information commands

Status and information commands can be used for sending different kinds of status information to a Central Station. Typically, such messages are used for reporting the status of a task the Mobile Telematics Terminal's user is performing. Requesting and sending information about the terminal itself is also common.

The following kinds of status and information commands are available:

- Status report (!STA)

  Typically used for informing the Central Station about task status. Some instruments also use this command for automatically reporting various device events such as connecting to a charger, or a change in the status of an input pin.

- Device information report (!INF)

  Used for automatically informing the Central Station about status of the instrument.

The sections below describe these command types in detail.

4.5.1. Assistance request (!ASS)

MTT → CS

The assistance request command can be sent by a Mobile Telematics Terminal to inform a Central Station about a need for assistance. It is sent when the user selects a user interface function to initiate it.

Sending

- Protector:

  This command can be manually sent by pressing the Assistance request keys of the terminal. The assistance request message will only be sent if the terminal's assistance call functionality has been programmed to include the sending. Corresponding button number will be added to data field at the end of message.

Command format

Length: 86...90 characters

Command*		Part number*		Mode*		Battery level*		Position source*		Position format*		Position*		Time stamp*		Speed*		Heading*		Data*
4	1	5	1	4	1	4	1	3	1	1	1	24	1	19	1	7	1	6	1	6
!ASS		01/01		norm		075%		gps		1		N60.26.54,3 E022.17.37,1		03.11.2003 10:29:01		142km/h		063deg		15

*) cf. section 3.1 for description of these fields.

4.5.2. Device information report (!INF)

MTT → CS

The device information report command can be sent by a Mobile Telematics Terminal to inform a Central Station about the status of the instrument. It is always sent automatically when a condition programmed for it is met.

Sending

This command is automatically sent when an event, which has been programmed to trigger it, occurs. Such events can include the battery charge level being low, the battery being too cold or warm, or the instrument being connected to or disconnected from a charger. The report is sent to the number configured as **Service center number** (cf. section 2.1.3).

To configure the use of this report, cf. below.

Command format

Length: 111...145 characters

Command*		Part number*		Mode*		Battery level*		Position source*		Position format*		Position*		Time stamp*		Speed*		Heading*	
4	1	5	1	4	1	4	1	3	1	1	1	24	1	19	1	7	1	6	1
!INF		01/01		norm		032%		gps		1		N60.26.54,3_ E022.17.37,1		11.07.2003 _09:57:46		142km/h		275deg	

Status code		Status text		Battery temperature		Battery capacity		Failure code		Time of sending
3	1	0…15	1	3…5	1	1…5	1	1…2	1	19
004		Battery low		-		-		0		11.07.2003 _09:58:03

*) cf. section 3.1 for description of these fields.

The special fields of the command are as follows:

Field	Description	Range
Status code	Device status code:	001…999

001: battery low
002: connected to mains
003: disconnected from mains
004: battery too cold
005: battery too hot
006: unknown battery
007: power on
008: power off
009: poor satellite coverage
010: sensor not detected
011: battery temperature out of range
012: charging error

013: accessory battery low
014: wake up for motion sensor
015: wake up for timer
016: man down turned on
017: man down turned off
018: beacon low battery
019: RF tag read. Tag ID also sent
020: DIN0825 start up test OK
021: DIN0825 powering off
022: OSM ACK
023: RfSwitch
024: NFC Tag read. NFC Tag ID also sent
025 Mandown pre-alarm triggered.
026 Docked smart charging station
027 Undocked smart charging station

Field	Description	Range
Status text	Textual description of device status, e.g. 'Battery low'. Note that different units may send different text	string of 0…15 chars

001: **Battery low**
002: **Mains on / Docked**
003: **Mains off / Un docked**
004: **Battery cold**
005: **Battery warm**
006: **Unknown battery**
007: **Power on**
008: **Power off**
009: **Poor sat. cov.**
010: **No sensor**
011: **Temp. wrong**
012: **Charging error**
013: **Low Battery B2 (number after "B" corresponds to linked RF button number**

	014: wake up for motion sensor	
	015: wake up for timer	
	016: man down turned on	
	017: man down turned off	
	018: beacon low battery	
	019: RF tag read. Tag ID also sent	
	020: DIN0825 start up test OK	
	021: DIN0825 powering off	
	022: OSM ACK	
	023: RfSwitch	
	024: NFC Tag. NFC Tag ID also sent	
	025: ManDown pre-alarm. ManDown trigger code also sent	
	026: SDocked (smart charging station ID also sent)	
	027 SUndocked (smart charging station ID also sent)	
Battery temperature	Not Used TWIG devices . This field is present on with first six status codes. With rest of the status codes the field is totally omitted from the message. In TWIG family this field contains '-' because the data is not available.	
Failure code	Internal code indicating reason for battery failure. '0' indicates OK status. This field is present on with first six status codes. With rest of the status codes the field is totally omitted from the message. In TWIG family this field contains '-' because the data is not available.	0…99
Time of sending	Date and time at which the report was sent. Universal Coordinated Time (UTC) is used.	date and time in format DD.MM. YYYY_hh:mm:ss

4.5.2.1. Acknowledgements to Information report messages

CS → MTT

This command is used to acknowledge various reports sent by the mobile telematics terminal or user.

Command format

Length: 10 characters

Command *		Approval		Request command
4	1	1	1	3
?ACK		1		TST

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
<u>Approval</u>	The report is received and accepted by control center: 0: Report **not approved** 1: Report **approved** If the report is approved or not approved, device will act accordingly.	0…1
<u>Request command</u>	Identifies the process to which the acknowledgement should affect: TST= Start up test (according to DIN0825) TAG=RF tag or NFC Tag read process PWR=Power off request (according to DIN0825)	3 characters

4.5.3. SW version and IMEI request (?SIR)

CS → MTT

The SW version and IMEI request command can be used by a Central Station to request a Mobile Telematics Terminal to send a report containing its IMEI code and information about the software versions it is running.

Reception

Upon receiving a SW version and IMEI request command a terminal should respond by sending a SW version and IMEI report command.

Depending on the authorization of the Central Station which requested the report, the response message may be sent automatically or the request may be disregarded altogether.

Command format

Length: 4 characters

Command*
4
?SIR

*) cf. section 3.1 for description of this field.

4.5.4. **SW version and IMEI report (!SIR)**

MTT → CS

The SW version, and IMEI report command is sent by a Mobile Telematics Terminal as a sole response to a SW version and IMEI request command from a Central Station.

Sending

This command can only be sent as a response to a SW and IMEI request.

TWIG Protector, TWIG Embody, TWIG Bracer

Length: 82 characters

Command*		Part number*		Software version		GPS software version		IMEI		GSM module software version
4	1	5	1	16	1	16	1	16	1	20
!SIR	_	01/01	_	CT1P.01.00 11.0000	_	XXXXXX	_	352021009123456	_	MC55 Revision 04.00

*) cf. section 3.1 for description of these fields.

The special fields of the command are as follows:

Field	Description	Range
Software version	Software version of device.	string
GPS software version	Software version of GPS module. (Note that the possible underscore chars in the SW version need to be replaced e.g. with space)	string
IMEI	IMEI code of the GSM module.	valid IMEI codes
GSM module	Software version of the GSM module.	string

4.5.5. **On-Screen message (?OSM)**

An MPTP message emulating a Type 0 short message could be useful for providing quick instructions or acknowledgements to the user of a terminal. To make things even better, MPTP could provide a possibility for using various audio visual effects to accompany such a message.

Sending

Mobile instruments do not support sending of this command.

Reception

Upon receiving this command, the receiving instrument will immediately show the message text on its display. [For those who know about SMS types, this will be done as if the message was a Type 0 short message.]

The appearance of the message is normally accompanied by playing the message reception tone and using lights and vibration as set in the receiving terminal; however, these default settings can be overridden by the Forced tone, Forced volume, Forced vibration and Forced lights parameters in the message. Moreover, the tone and other effects taking place at the time of reception can be repeated later to make sure that the user of the receiving terminal notices the message. This is done by setting the Reminder interval.

The message will remain visible until it is dismissed by acknowledging with a button by short press (short press and key up will clear). END/Hang up/RED or number key button of the device or until it is replaced by another message. It will not be stored anywhere, but if there is any other event before the user acknowledges the message it will be resumed after other UI events, e.g. incoming call.

The parameter called 'Forced effects' should appear after part number. Having value 0 means that no forced effects shall be used and there will be no recurring reminders; the command format would then continue with message text directly after part number. Having value 1 means that all effects and the reminder should be present as in the concept.

Sending empty message string will clear the display and end the OSM event in the device.

Command format

Command		Part number		Forced effects		Forced tone		Forced volume		Forced vibration		Forced lights		Forced Timeout		Reminder interval		Clear condition		Message
4	1	5	1	1	1	1…3	1	1	1	1	1	1	1	1..3	1	1…5	1	1	1	0…139
?OSM	_	01/01	_	1	_	-	_	-	_	1	_	1	_	1	_	60	_	1	_	Fire evacuate

The command-specific fields of the command are as follows:

Field	Description	Range
Forced effects	This field defines if the Forced Effects are used or not. 0= do not use forced settings (defaults will be used) 1= forced effects are used (all fields must be defined)	0-1
Forced tone	Tone played upon arrival of the message. - Use default message reception tone. 0 Do not use a tone. 1…999 Use tone with given number.	-, 0…999
Forced volume	Volume at which the tone is played. - Use default message reception volume. 0…5 Use volume at given level, with 0 signifying silent operation.	-, 0…5
Forced vibration	Use of vibration upon arrival of the message: - Use default setting for vibration. 0 Do not use vibration. 1 Use vibration.	-, 0…1
Forced lights	Use of lights upon arrival of the message: - Use default setting for lights. 0 Do not use lights. 1 Use lights.	-, 0…1
Forced Timeout	Timeout for displaying the message unless cleared by u	0…999

| | 0 | No timeout, user or remote clearance only. |
| | 1..999 | Timeout in seconds to show message. |

<u>Reminder interval</u>	Interval at which the message reception effects will be replayed until the user acknowledges the message. 0= disabled, no reminder used (default value)	0…65535 seconds
<u>Clear condition</u>	Function defining how the message can be cleared.	0…3

0 = with any key

1 =only from center (receiving "empty" ?OSM)

2 = with END key

3 = only with key 1, that also sends ACK to center

4 = only with key 2, that also sends ACK to center

5 =only with key 3, that also sends ACK to center

6 = only with key 4, that also sends ACK to center

<u>Message</u>	Message text to be shown on the receiving terminal's display.	any string with supported characters (A-Z, a-z, 0-9

If the message is sent in several parts, only the first part will contain the fields <u>Forced tone</u> … <u>Reminder interval</u>. They will be omitted from subsequent parts, leaving up to 149 characters to be used for the <u>Message</u> text.

NOTE, 'Forced effects' not supported in TCP90 devices. These devices only ' Not Forced effects' will be supported. Thus message will be format : "?OSM_01/01_0_Fire evacuate".

4.6. Supported characters on the text field are0 9;A-Z and a-z persistent setting configuring (?CNF)

CS → MTT

There are a multitude of persistent settings, many of which are specific to certain instrument models only. Check Table of CNF – document.

Each persistent setting has a reference number. A persistent setting configuring MPTP command always starts in the same way, with the <u>Setting ID</u> parameter determining the format of the rest of the command. Please note, that some configurations require the unit to be restarted to get effect. In some devices the restart can be done with a specific MPTP command. cf. Reset terminal request 4.9

Variations of the command are described in subsequent sections.

A special feature of persistent setting configuration commands is that several settings can be configured in one message. This is done by adding several Setting IDs and their parameters in one message. For example to configure GPS operating mode and GPRS server parameters in one message the message could look like following. ?CNF_01/01_0060_1_0302_123.456.456.999_1234.

4.6.1. Settings 2001–2019,2110-2113-General Settings

Defines the General instrument related settings. Settings can be sent in same message with limitation of 5 settings or total length of message 160 characters depending which is met first. **Note that only Setting ID's from 2000 can be combined into set of 5.** (CNF2009 requires CT1P.01.005.000 or later)

Command format

Command*		Part number*		Setting ID		SIM Card PIN Code		Setting ID		Generic application sound level		Setting ID		Lost GSM beep		Setting ID		White list usage		Setting ID		Service Center
4	1	5	1	4	1	4	1	4	1	1	1	4	1	1	1	4	1	1	1	4	1	24
?CNF	_	01/01	_	2001	_	4321	_	2002	_	3	_	2003	_	3	_	2004	_	3	_	2005	_	+358801234567

The special fields of the command are as follows:

Setting ID	Field	Description	Range
2001	SIM Card PIN Code	Defines the PIN code that is entered automatically if SIM card has PIN request active	4 digits
2002	Generic application sound level	Defines the volume level, that is used to play warning, notification & incoming call tones	1-5
2003	Lost GSM beep	Defines the interval for BEP tone if the roaming GSM network has been lost. Default 0 = disabled	0,20-65534 sec
2004	White list usage	Defines how the white list is used, Default 0	0=disabled 1=SMS 2=CALL 3=SMS + Call
2005	Service Center	Defines the number where generic Mobile originated messages are send	0-24 numbers
2006	MPTP header translation	Defines if MPTP command headers are changed from ? to Q and ! to E. Needed in some countries due to SMSC functions.	0=disabled 1=enabled (translate)
2007	automatic answer	Defines if call from any number is automatically answered. Discards whitelist call check. Default 0	0=disabled 1=enabled

				2=block all incoming calls
2008	Power off disabled	Defines if the power key can be used to turn off the device. Default 0 (power off allowed)		0..1
2009	Power saving mode	Defines the power saving mode. Note that if *power saving mode* selection is other than *´disable´* then *GPS Motion Sensitivity* and *ManDown* functions are disabled. 0= Device does not enter "deep sleep" at all. Device uses timers (such as *GPS Max Search Time*, *GPS Sleep Time*, *GPRS Reconnect Interval*) to control operation and current consumption. 1= Device wakes up after *GPRS Reconnect Interval* has elapsed, or whenever it moves (detected movement is greater than *GPS Motion Sensitivity* [mG]). As long as device is awake it is controlled normally by *GPS Max Search Time*, *GPS Sleep Time* and *GPRS Reconnect Interval*. If tracking is activated, tracking update messages are sent only when device is moving and awake. Whenever movement stops (detected movement is below *GPS Motion Sensitivity* [mG]), device goes to sleep after 5 minutes. 2= Only applicable to TWIG Asset Locator. The device wakes up only to the Power ON key, or after GPRS Reconnect interval or active tracking interval has elapsed.		0=disabled 1=medium/G-sensor 2= heavy/timer
2010	Vibration usage	Define if vibrator is used in conjunction of the TWIG SOS. The vibrator will vibrate during pressing the button and in case of Man Down Alert also in pre alarm. (Not supported TUP90EU type devices)		0=Vibration 1=No Vibration
2011	Lights usage	Defines if the TWIG SOS is sent without showing anything on screen. This allows discrete or hidden TWIG SOS. (Not supported TUP90EU type devices)		0=Display enabled 1=Display disabled
2012	OSM message tone	Defines playing tone type when device receive OSM message		0=off 1=beep 2= continuous tone
2013	Turn off when placed to charging station	Device turned OFF when device placed on charging station .		0=disabled 1=enabled
2014	Turn on when removed from charging station	Device turned ON when device removed from charging station		0=disabled 1=enabled
2019	Incoming Call reject/END	If disabled user cant reject or end incoming call with END key		0=disabled 1=enabled

2110	Silent incoming/outgoing call initiation	If enabled then device earphone audio is kept muted until call will be answered and line connected	0=disabled 1=enabled
2111	Hide calls number	If enabled phone numbers of incoming/outgoing calls are not displayed on device screen.	0=disabled 1=enabled
2112	Haptic Vibra feedback	Defines vibrating time when user presses UI keys	0= OFF 1=100ms 2=200ms 3=300ms 4=400ms 5=500ms 6=600ms 7=700ms 8=800ms 9=900ms 10=1000ms
2113	Low battery warning mode	Defines how the user is notified with tone and vibration of the low battery level.	0=default 1=Once 2=Never

4.6.2. Settings 2015-2016 GSM settings

Setting ID	Field	Description	Range
2015	Mobile network mode	Defines how device uses mobile networks	7=2G/3G/4G automatic 3=2G/3G automatic 2=3G only 1=2G only
2016	VoLTE mode	Defines if VoLTE mode is enabled or not.	0=disabled 1=enabled

4.6.3. **Settings 2020–2026 -GPS Settings**

Defines the GPS related settings.

The special fields of the command are as follows:

Setting ID	Field	Description	Range
2020	GPS sleep time	Defines the sleep time of the GPS in basic mode Default= 600	0-65534 sec
2021	GPS max search time	Defines how long the position is tried before going to sleep. Default 300	120-600 sec
2022	AGPS usage	Defines if the unit requests assistance data via GPRS gateway. 0= disabled, 1=Legacy mode,2= Long Term mode (supported only SW CT3…) default 0	0-2
2023	GPS motion sensor control	Defines if motion sensor is used to control GPS. If set to on, movement higher than defined in CNF2024 turns GPS on, if Sleep interval has passed. Default = 0 (disabled). Note this function can not be used simultaneously with Man Down alert	0-1
2024	Sensitivity	Defines in mG value the acceleration level, that must be exceeded to wake the GPS from sleep. Default 20	20-100 mG
2025	Realtime economy mode	Defines GPS functionality during the real time tracking so, that GPS is automatically turned ON/OFF if position acquisition is not possible.	0-1
2026	GPS/GNSS position validity period	Specifies the time after which the GPS position is interpreted as not valid in 'Easy Mode'.	5-8639999sec

4.6.4. **Settings 2030-2059, 2080-2084,2090-2096 -Environment Settings**

With commands defined device *Earpiece Volume*, alarm/warning *Tone Volume*, *Light Mode* and *Vibration Mode* values for various events.

Setting ID	Field	Description	Range
2030	Normal environment Earpiece volume	Define Earpiece volume level during a call. Volume levels 4 and 5 enable Speaker Phone level	0=muted 1…5
2031	Normal environment Tone volume	Define warning, notification and incoming call tones volume level	0=muted 1…5
2032	Normal environment Vibration usage	Defines whether vibration is used	0=disable 1=enable
2033	Normal environment Light usage	Defines if there used lights on display during of call or other event in Idle	0=Disable 1=Enable

2035	Hands Free environment Earpiece volume	Define Earpiece volume level during a HF call. Volume levels 4 and 5 enable Speaker Phone level	0=Mute 1…5
2036	Hands Free environment Tone volume	Define warning, notification and incoming call tones volume level	0=Mute 1…5
2037	Hands Free environment Vibration usage	Defines whether vibration is used incoming call	0=Disable 1=Enable
2038	Hands Free environment Light usage	Defines if there used lights on display during of HF call	0=Disable 1=Enable
2040	SOS key environment Earpiece volume	Define Earpiece volume level when alert trigger was SOS key. Volume levels 4 and 5 enable Speaker Phone level	0=Mute 1…5
2041	SOS key environment Tone volume	Define warning, notification tones volume level when alert trigger was SOS key	0=Mute 1…5
2042	SOS key environment Vibration usage	Defines whether vibration is used when alert trigger was SOS key	0=Disable 1=Enable
2043	SOS key environment Light usage	Defines if there used lights on display during of SOS key pressing	0=Disable 1=Enable
2044	SOS key environment Tone	Define SOS key Alarm Tone	0…11
2045	TWIG Button environment Earpiece volume	Define Earpiece volume level when alert trigger was TWIG Button. Volume levels 4 and 5 enable Speaker Phone level	0=Mute 1…5
2046	TWIG Button environment Tone volume	Define warning, notification tones volume level when alert trigger was TWIG Button	0=Mute 1…5
2047	TWIG Button environment Vibration usage	Defines whether vibration is used when alert trigger was TWIG Button	0=Disable 1=Enable
2048	TWIG Button environment Light usage	Defines if there used lights on display during of TWIG Button pressing	0=Disable 1=Enable
2049	TWIG Button environment Tone	Define TWIG BUTTON Alarm Tone	0…11
2050	ManDown environment Earpiece volume	Define Earpiece volume level when alert trigger was ManDown sensor. Volume levels 4 and 5 enable Speaker Phone level	0=Mute 1…5
2051	ManDown environment Tone volume	Define warning, notification tones volume level when alert trigger was ManDown sensor	0=Mute 1…5
2052	ManDown environment Vibration usage	Defines whether vibration is used when alert trigger was ManDown sensor	0=Disable 1=Enable
2053	ManDown environment	Defines if there used lights on display during of ManDown alert	0=Disable

		Light usage		1=Enable
2054	ManDown environment Tone	Define ManDown Alarm Tone		0…11
2055	Amber alert environment Earpiece volume	Define Earpiece volume level when alert trigger was Amber alert. Volume levels 4 and 5 enable Speaker Phone level		0=Mute 1…5
2056	Amber alert environment Tone volume	Define warning, notification tones volume level when alert trigger was Amber alert		0=Mute 1…5
2057	Amber alert environment Vibration usage	Defines whether vibration is used when alert trigger was Amber alert		0=Disable 1=Enable
2058	Amber alert environment Light usage	Defines if there used lights on display during of alert when trigger was Amber alert		0=Disable 1=Enable
2059	Amber alert environment Tone	Define Amber alert Alarm Tone		0…11
2080	Ripcord environment Earpiece volume	Define Earpiece volume level when alert trigger was Ripcord. Volume levels 4 and 5 enable Speaker Phone level (		0=Mute 1…5
2081	Ripcord environment Tone volume	Define warning, notification tones volume level when alert trigger was Ripcord		0=Mute 1…5
2082	Ripcord environment Vibration usage	Defines whether vibration is used when alert trigger was Ripcord		0=Disable 1=Enable
2083	Ripcord environment Light usage	Defines if there used lights on display during of alert when trigger was Ripcord		0=Disable 1=Enable
2084	Ripcord environment Tone	Define Ripcord Alarm Tone		0…11
2090	Normal environment Mute button tone	Defines if SEND (F1)/END (F2) keys muted in Normal environment.		0=Not Muted 1=Muted
2091	Hands Free environment Mute button tone	Defines if SEND (F1)/END (F2) keys muted in HF environment.		0=Not Muted 1=Muted
2092	SOS key environment Mute button tone	Defines if SEND (F1)/END (F2) keys muted in SOS mode which trigger was SOS key.		0=Not Muted 1=Muted
2093	TWIG Button environment Mute button tone	Defines if SEND (F1)/END (F2) keys muted muted in SOS mode which trigger was Remote button.		0=Not Muted 1=Muted
2094	ManDown environment Mute button tone	Defines if SEND (F1)/END (F2) keys are muted in SOS mode when trigger was ManDown		0=Not Muted 1=Muted

2095	Amber alert environment Mute button tone	Defines if SEND (F1)/END (F2) keys muted muted in SOS mode which trigger was Amber Alert.	0=Not Muted 1=Muted
2096	Ripcord environment Mute button tone	Defines if SEND (F1)/END (F2) keys muted muted in SOS mode which trigger was ripcord.	0=Not Muted 1=Muted

4.6.5. Settings 2085-2086 HF microphone and loudspeaker gain.

Commands define device handsfree microphone and loudspeaker gain.

2085	Loudspeaker gain	Defines the gain type used by the speaker Level 1 low gain… Level 5 high gain	0=Level 5 1=Level 4 2=Level 3 3=Level 2 4=Level 1
2086	Handsfree microphone gain	Defines the gain type used by the microphone.Level 1 low gain… Level 3 high gain	0=Level 3 1=Level 2 2=Level 1

4.6.6. Settings 2060-2072 Display and time settings

Commands define for Display orientation, date, time, time format and time zone

2060	Display duration	Defines the time in seconds which the display stays on after last keypress in seconds	20…1440
2061	Display clock	Defines if the clock is shown on the display and what is the time format	0=OFF 1=HH:mm 2=H:mm 3=ttH:mm 4=H.mm
2062	Clock time displaying duration	Defines the time in seconds which the Clock time stays on display in seconds	20…300
2063	Clock time offset	Defines the offset in seconds From GSM network = 1843200	1843200, -43200…50400

Hour Second

-12 -43200

-11 -39600

-10 -36000

-9 -32400

-8 -28800

-7 -25200

-6 -21600

			-5	-18000
			-4	-14400
			-3	-10800
			-2	-7200
			-1	-3600
			0	0
			1	3600
			2	7200
			3	10800
			4	14400
			5	18000
			6	21600
			7	25200
			8	28800
			9	32400
			10	36000
			11	39600
			12	43200
			13	46800
			14	50400
2065	Clock Contrast	Defines the clock contrast in percent from full brightness	0..100	
2066	Orientation	Defines clock orientation. 0=Normal, 1=upside down or 2=automatic	0-2	
2067	DST	Defines if daylight savings time is used automatically or not	0=Not Used 1=Used	
2068	Display Date	Defines if date is shown on the display or not and which are the date format.	0=Disabled 1=dd.MM.yyyy 2=dd/MM/yyyy 3=dd/MM/yy 4=dd.MM.yy 5=dd-MM-yy 6=yyyy/MM/dd 7=yyyy-MM-dd 8=Easy mode	
2070	Easy Mode GSM status text	Defines GSM status text on display when Date format Easy mode is used	1…24 character	
2071	Easy Mode GNSS status text	Defines GNSS status text on display when Date format Easy mode is used	1…24 character	
2072	Easy Mode Battery status text	Defines Battery status text on display when Date format Easy mode is used	1…24 character	

4.6.7. **Settings 2097-2099,2112 UI keys settings**

Commands define UI keys alternative functions/methods for the SEND/END (F1/F2) keys.

2097	Function key 1	Defines SEND/F1 key secondary function	0=Primary function 1=GNSS ON/OFF 2=ManDown ON/OFF 3=ManDown pause 4=Amber alert ON/OFF 5=Assistance call/message 6=Push to fix 7=Power Off 8=Ripcord ON/OFF
2098	Function key 2	Defines END/F2 key secondary function	0=Primary function 1=GNSS ON/OFF 2=Mandown ON/OFF 3=ManDown pause 4=Amber alert ON/OFF 5=Assistance call/message 6=Push to fix 7=Power Off 8=Ripcord ON/OFF
2099	UI key mode	Determines how many times UI key or SOS key must be pressed to perform the function.	0=Long press 1=Two presses 2=Three presses 3=Four presses 4=Five presses 5=Six presses 6=Seven presses
2112	Haptic vibra feedback	Defines vibrating time in when user presses UI keys. Default value 10	0=OFF 1=100msec 2=200msec 3=300msec 4=400msec 5=500msec 6=600msec 7=700msec 8=800msec

9=900msec
10=1000msec

4.6.8. Settings 2101–2107 –Information messaging

Defines the Automatic status messaging use. The INF-reply is defined in 2.2.4. Settings can be sent in same message with limitation of 5 settings or total length of message 160 characters depending which is met first.

The special fields of the command are as follows:

Setting ID	Field	Description	Range
2101	Low battery	Defines if the low battery message is sent. Default 0 = disabled	0=0 1=20 2=40 3=60
2102	Docked	Defines if the docked message is sent default 0	0=disabled 1=enabled
2103	Un Docked	Defines if the undocked message is sent default 0	0=disabled 1=enabled
2104	Power on	Defines if the power on message is sent default 0	0=disabled 1=enabled
2105	Power off	Defines if the power off message is sent default 0	0=disabled 1=enabled
2106	ManDown on/off	Defines if the ManDown on/off message is sent when toggled from keypad. default 0	0=disabled 1=enabled
2107	ManDown pre-alarm	Defines if the ManDown pre-alarm message is sent when pre-alarm started.	0=disabled 1=enabled

4.6.9. Settings 2118-2132-Menu key functions

Defines the functions that are available through the menu key.

Setting ID	Field	Description	Function
2118	Menu key item1	Defines the function of menu key item1	0= Not in Use 1=GNSS ON/OFF 2=ManDown ON/OFF 3=ManDown Pause 4=Amber alert ON/OFF 5=Assistance call/message 6=Push to Fix 7=Power Off 9= Read NFC Tag 10=Mute/unmute/vibrate mode toggle
2119	Menu key item2	Defines the function of menu key item2	As in item1
2120	Menu key item3	Defines the function of menu key item3	As in item1
2121	Menu key item4	Defines the function of menu key item4	As in item1
2122	Menu key item5	Defines the function of menu key item5	As in item1
2123	Menu key item6	Defines the function of menu key item6	As in item1
2124	Menu key item7	Defines the function of menu key item7	As in item1
2125	Menu key item8	Defines the function of menu key item8	As in item1
2126	Menu key item9	Defines the function of menu key item9	As in item1
2127	Menu key item10	Defines the function of menu key item10	As in item1
2128	Menu key item11	Defines the function of menu key item11	As in item1
2129	Menu key item12	Defines the function of menu key item12	As in item1
2130	Menu key item13	Defines the function of menu key item13	As in item1
2131	Menu key item14	Defines the function of menu key item14	As in item1

	2132	Menu key item15	Defines the function of menu key item15	As in item1

4.6.10.   Settings 2201–2206 –TWIG SOS settings

Defines the General TWIG SOS settings . Settings can be sent in same message with limitation of 5 settings or total length of message 160 characters depending which is met first.

The special fields of the command are as follows:

Setting ID	Field	Description	Range
2201	SOS Key activation mode	Defines how the TWIG SOS button is activated. If set to 0, button is not active	0= disabled 1=long press 2= two presses
2202	Activation method timeout	Defines how long the SOS button needs to be pressed or within what time it needs to be pressed twice. default 5	1-5 seconds
2203	GPS ON time	Defines GPS on time after TWIG SOS is activated.	600-65534 sec
2204	Cancellation period	Defines the period when the TWIG SOS still can be cancelled if activated from TWIG SOS button. Default 0	0-20 sec
2205	END key timeout	Defines if the TWIG SOS can be ended once started. 0= can not be ended, default 1	0,1-5 sec
2206	Post emergency usage	Defines if Post emergency mode is used. Default 1	0..1

4.6.11.   Settings 2211–2214 –TWIG SOS profile settings

Defines the General TWIG SOS profile settings . Settings can be sent in same message with limitation of 5 settings or total length of message 160 characters depending which is met first.

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The special fields of the command are as follows:

Setting ID	Field	Description	Range
2211	Displays	Defines how the display is reacting on the TWIG SOS button. If displays are disabled also backlight is disabled. Default 1.	0= disabled 1= active
2212	Vibration	Defines if vibration is used to indicate "keep pressing" or "press twice". Vibration will activate in same sequence as the wedges on the screen even if the displays are off. Default 1	0= disabled 1= active
2213	Application sound level	Defines the sound level how the warning and information tones are played within TWIG SOS, Man Down and RF transmitter initiated TWIG SOS	1-5
2214	Speaker level	Defines the Speaker volume level in TWIG SOS. if set to 0, only audio to center is active.	0,1-5

4.6.12.   Settings 2301–2396 –TWIG SOS event data settings

Defines the General TWIG SOS emergency cycle event data . Settings can be sent in same message with limitation of 5 settings or total length of message 160 characters depending which is met first.

The special fields of the command are as follows:

Setting ID	Field	Description	Range
2301	Event type	Defines the type of event number 1	1=SMS/GPRS 2=call 3=Google 4=Text only 5=SMS MPTP hybrid location !EMU 7=VoIP call (129=MPTP limited hybrid location !EMG) 131=Google hybrid location
2302	Number	Defines the recipient 1 number	0-24 numbers
2303	Name	Defines the recipient 1 name	0-12 characters
2304	Event retries	Defines how may retries are done to this individual event. Default= 1	0-5

2305	Event group	Defines the group the event is linked. All events in same group must be successfully passed before TWIG SOS is successfully ended Default= 1	1-9
2306	SOS text	Defines the SOS text used in event 1. If empty, the EMG message uses the SOS text defined in settings of general SOS texts.	0-20 characters
2311	Event type	Defines the type of event number 2	1=SMS/GPRS 2=call 3=Google 4=Text only 5=SMS MPTP hybrid location !EMU 7=VoIP call (129=MPTP limited hybrid location !EMG) 131=Google hybrid location
2312	Number	Defines the recipient 2 number	0-24 numbers
2313	Name	Defines the recipient 2 name	0-12 characters
2314	Event retries	Defines how may retries are done to this individual event. Default= 1	0-5
2315	Event group	Defines the group the event is linked. All events in same group must be successfully passed before TWIG SOS is successfully ended Default= 1	1-9
2316	SOS text	Defines the SOS text used in event 2. If empty, the EMG message uses the SOS text defined in settings of general SOS texts.	

2321	Event type	Defines the type of event number 3	1=SMS/GPRS 2=call 3=Google 4=Text only 5=SMS MPTP hybrid location !EMU 7=VoIP call (129=MPTP limited hybrid location !EMG) 131=Google hybrid location
2322	Number	Defines the recipient 3 number	0-24 numbers
2323	Name	Defines the recipient 3 name	0-12 characters
2324	Event retries	Defines how may retries are done to this individual event. Default= 1	0-5
2325	Event group	Defines the group the event is linked. All events in same group must be successfully passed before TWIG SOS is successfully ended Default= 1	1-9
2326	SOS text	Defines the SOS text used in event 3. If empty, the EMG message uses the SOS text defined in settings of general SOS texts.	0-20 characters
2331	Event type	Defines the type of event number 4	1=SMS/GPRS 2=call 3=Google 4=Text only 5=SMS MPTP hybrid location !EMU 7=VoIP call (129=MPTP limited hybrid location !EMG) 131=Google hybrid location
2332	Number	Defines the recipient 4 number	0-24 numbers
2333	Name	Defines the recipient 4 name	0-12 characters
2334	Event retries	Defines how may retries are done to this individual event. Default= 1	0-5
2335	Event group	Defines the group the event is linked. All events in same group must be successfully passed before TWIG SOS is successfully ended Default= 1	1-9
2336	SOS text	Defines the SOS text used in event 4. If empty, the EMG message uses the SOS text defined in settings of general SOS texts.	

2341	Event type	Defines the type of event number 5	1=SMS/GPRS 2=call 3=Google 4=Text only 5=SMS MPTP hybrid location !EMU 7=VoIP call (129=MPTP limited hybrid location !EMG) 131=Google hybrid location
2342	Number	Defines the recipient 5 number	0-24 numbers
2343	Name	Defines the recipient 5 name	0-12 characters
2344	Event retries	Defines how may retries are done to this individual event. Default= 1	0-5
2345	Event group	Defines the group the event is linked. All events in same group must be successfully passed before TWIG SOS is successfully ended Default= 1	1-9
2346	SOS text	Defines the SOS text used in event 5. If empty, the EMG message uses the SOS text defined in settings of general SOS texts.	0-20 characters
2351	Event type	Defines the type of event number 6	1=SMS/GPRS 2=call 3=Google 4=Text only 5=SMS MPTP hybrid location !EMU 7=VoIP call (129=MPTP limited hybrid location !EMG) 131=Google hybrid location
2352	Number	Defines the recipient 6 number	0-24 numbers
2353	Name	Defines the recipient 6 name	0-12 characters
2354	Event retries	Defines how may retries are done to this individual event. Default= 1	0-5
2355	Event group	Defines the group the event is linked. All events in same group must be successfully passed before TWIG SOS is successfully ended Default= 1	1-9
2356	SOS text	Defines the SOS text used in event 6. If empty, the EMG message uses the SOS text defined in settings of general SOS texts.	0-20 characters

2361	Event type	Defines the type of event number 7	1=SMS/GPRS 2=call 3=Google 4=Text only 5=SMS MPTP hybrid location !EMU 7=VoIP call (129=MPTP limited hybrid location !EMG) 131=Google hybrid location
2362	Number	Defines the recipient 7 number	0-24 numbers
2363	Name	Defines the recipient 7 name	0-12 characters
2364	Event retries	Defines how may retries are done to this individual event. Default= 1	0-5
2365	Event group	Defines the group the event is linked. All events in same group must be successfully passed before TWIG SOS is successfully ended Default= 1	1-9
2366	SOS text	Defines the SOS text used in event 7. If empty, the EMG message uses the SOS text defined in settings of general SOS texts.	0-20 characters
2371	Event type	Defines the type of event number 8	1=SMS/GPRS 2=call 3=Google 4=Text only 5=SMS MPTP hybrid location !EMU 7=VoIP call (129=MPTP limited hybrid location !EMG) 131=Google hybrid location
2372	Number	Defines the recipient 8 number	0-24 numbers
2373	Name	Defines the recipient 8 name	0-12 characters

2374	Event retries	Defines how may retries are done to this individual event. Default= 1	0-5
2375	Event group	Defines the group the event is linked. All events in same group must be successfully passed before TWIG SOS is successfully ended Default= 1	1-9
2376	SOS text	Defines the SOS text used in event 8. If empty, the EMG message uses the SOS text defined in settings of general SOS texts.	0-20 characters
2381	Event type	Defines the type of event number 9	1=SMS/GPRS 2=call 3=Google 4=Text only 5=SMS MPTP hybrid location !EMU 7=VoIP call (129=MPTP limited hybrid location !EMG) 131=Google hybrid location
2382	Number	Defines the recipient 9 number	0-24 numbers
2383	Name	Defines the recipient 9 name	0-12 characters
2384	Event retries	Defines how may retries are done to this individual event. Default= 1	0-5
2385	Event group	Defines the group the event is linked. All events in same group must be successfully passed before TWIG SOS is successfully ended Default= 1	1-9
2386	SOS text	Defines the SOS text used in event 9. If empty, the EMG message uses the SOS text defined in settings of general SOS texts.	0-20 characters
2391	Event type	Defines the type of event number 10	1=SMS/GPRS 2=call 3=Google 4=Text only 5=SMS MPTP hybrid location !EMU 7=VoIP call (129=MPTP limited hybrid location !EMG) 131=Google hybrid location
2392	Number	Defines the recipient 10 number	0-24 numbers
2393	Name	Defines the recipient 10 name	0-12 characters
2394	Event retries	Defines how may retries are done to this individual event. Default= 1	0-5

2395	Event group	Defines the group the event is linked. All events in same group must be successfully passed before TWIG SOS is successfully ended Default= 1	1-9
2396	SOS text	Defines the SOS text used in event 10. If empty, the EMG message uses the SOS text defined in settings of general SOS texts.	0-20 characters

4.6.13. Settings 2400–2428–TWIG SOS Cycle settings

Defines the General TWIG SOS emergency cycle settings. Settings can be sent in same message with limitation of 5 settings or total length of message 160 characters depending which is met first.

The special fields of the command are as follows:

Setting ID	Field	Description	Range
2400	MPTP SOS Text	Defines the text, that is added to the data field on EMG message when TWIG SOS is sent from SOS key. Default= SOS BUTTON	0-59characters
2401	MPTP MD Text	Defines the text, that is added to the data field on EMG message when TWIG SOS is sent from Man Down Alert. Default= MAN DOWN ALERT	0-59 characters
2402	MPTP RF SOS Text	Defines the text, that is added to the data field on EMG message when TWIG SOS is sent from Wrist Alert key. Default= SOS BUTTON	0-59 characters
2403	MPTP Amber Alert / Condition Check text	Defines the text, that is added to the data field on EMG message when TWIG SOS is sent from Amber Alert / condition Check. Default= CONDITION CHECK	0-59 characters
2404	MPTP Ripcord SOS Text	Defines the text that is added to the data field on EMG message when TWIG SOS is sent from Ripcord alert Default= RIPCORD ALERT	0-59 characters

2405	Wireless alert unit	Defines the #1 Wireless alarm unit serial number, that is paired with the unit.	0-15 characters
2406	Wireless alert unit	Defines the #2 Wireless alarm unit serial number, that is paired with the unit.	0-15 characters
2407	Wireless alert unit	Defines the #3 Wireless alarm unit serial number, that is paired with the unit.	0-15 characters
2408	Wireless alert unit	Defines the #4 Wireless alarm unit serial number, that is paired with the unit.	0-15 characters
2409	Wireless alert unit	Defines the #5 Wireless alarm unit serial number, that is paired with the unit.	0-15 characters
2420	Event start delay	Define the delay that is used between events in TWIG SOS. Default 2	0-60 sec
2421	Call timeout	Defines the timeout to skip to next event on SOS list if no answer from B-subscriber	20-300 sec
2422	Full SOS cycles	Defines the amount of full TWIG SOS event cycles to be done. Default 1	1-5
2423	Emergency number text	Defines the text to be shown when use is prompted to call network emergency number. Default 112	1-3 characters
2424	SOS ACK response time	Defines for how long device will wait for ACK message via GPRS from the EMG message recipient. Default 0= ACK disable	0, 20-600s
2425	SOS call continue	Forces the emergency cycle to process all calls even if the preceding call is successful	0=disabled 1=enabled
2426	Power off button disabled	Blocks the user from turning off the unit with power key	0=key enabled 1=key disabled
2427	Ripcord enabled	Defines the interval how long the ripcord can be unplugged before alarm triggering Default 0 = disabled	0=disabled 2…100 seconds
2428	Replug cancellation enabled	Setting allows to cancel the alarm from starting if plug is put back to its place within timeout period.	0=disabled 1=enabled

4.6.14.   Settings 2430–TWIG SOS Post emergency cycle

Defines the General TWIG SOS post emergency cycle settings. Settings can be sent in a same message with limitation of 5 settings or total length of message 160 characters depending on which is met first.

The special fields of the command are as follows:

Setting ID	Field	Description	Range
2430	Post emergency beep	Defines the interval on the "locate me" Beeb is played. Default =0 = disabled	0,1-300 seconds

4.6.15.   Settings 2440–2456 –TWIG SOS Man Down Alert

Defines the General TWIG SOS ManDown Alert settings. Settings can be sent in a same message with limitation of 5 settings or total length of message 160 characters depending on which is met first. The special fields of the command are as follows

Setting ID	Field	Description	Range
2440	Alerts when	Defines the orientation/environment when the alarm is detected	1=Horizontal 2=Vertical 3=No movement
2441	Sensor usage	Defines the operating mode of the sensor. Default 0.	0=disabled 1=enabled 2=User enabled ON 3=User enabled OFF
2442	No Alarm duration	Defines the interval how long the condition "Alerts when" must be active before the state is confirmed and entered to pre alarm mode. Default 30	0-65534 seconds
2443	Pre alarm duration	defines the interval how long pre alarm is active before SOS is activated. Default 30	0-65534 seconds

2444	Motion sensitivity	Defines the acceleration value what is used when defining the movement for alert. Default 100	0=Disabled 20-999 mG
2445	ManDown Angle	Defines the tilt angle the phone must fall, before the mode is detected as "fallen" Default 45	0-90
2450	ManDown Normal Status Delay	Defines the delay how long device must be in normal (not triggering alert) orientation to reset alert trigger.	1-5
2451	ManDown restart mode	Defines if Man Down is automatically triggered without resetting to normal orientation or performed only once. 0 = once, 1= repeating automatically	0-1
2452	ManDown + no movement	Define the Man Down + second timer for alerting from non movement if Man Down is set to alert otherwise on orientation	0-65534sec
2453	ManDown ++ Freefall	Defines if alert is triggered when device detect free falling. Limit is set to approximately 90cm	0-1
2454	ManDown ++ Impact	Defines if alert is triggered when device detects impact. Direction of impact is not significant	0-1
2455	ManDown pre-alarm cancel enabled	Defines if user is allowed to cancel the ManDown++ pre-alarm	0=disabled 1=enabled
2455	Torch Flash	Defines if torch LED light flashing is enabled during the ManDown pre-alarm (Only TWIG Bracer device)	0=disabled 1=enabled
2456	ManDown pause Time	Determines the time the sensor is paused when user activates *ManDown pause* time function. Related to the UI keys function	30-8639999sec
2457	ManDown pause Start time	Defines the time value of the first selectable ManDown pause length	30-3600 sec
2458	ManDown pause Time step	Defines the time value between next selectable pause time steps.	30-3600 sec
2459	ManDown pause Number of Items	Defines the amount of selectable time value alternatives displayed in the ManDown pause menu	1-5

4.6.16.   Settings 2500–2542 –GPRS Settings

Defines the General GPRS settings. Note, that also CNF 0300-0302 are supported. Settings can be sent in same message with limitation of 5 settings or total length of message 160 characters depending which is met first. CNF2511-CNF2527 requires FW CT3P.01.003.000 or later. The special fields of the command are as follows:

Setting ID	Field	Description	Range
2500	GPRS usage	Defines if GPRS is used or not. Default 1	0=disabled 1=enabled
2501	USER ID	Defines the ID used in GPRS communications	0-24 character
2502	Service Number	Defines the Service number for MPTP messages used in GPRS backup	0-24 character
2503	IP address	Defines the Gateway IP address. Default TWIG Server. **Note different setting for server name**.	15 characters
2504	Server port	Defines the gateway port	0…5 numbers
2505	GPRS APN	Defines the Access point name to GPRS, if needed	0-24 character
2506	User name	Defines user name to connection is needed	0-24 character
2507	Password	Defines password for connection if needed	0-24 character
2508	Int Roaming block	Defines the GPRS data block in roaming networks. Default 1	0=disable 1=enable
2509	Reconnect int	Defines the GPRS connection reconnection interval in seconds when used connection mode is "only reconnect". Default is 600 sec.	120-86400 sec
2510	Connection mode	Defines how the GPRS connection to server is kept active. default 0	0=only reconnect 1=when in charger 2=always
2511	IP address	Defines the Gateway IP address name Default is TWIG Server URL	0-60 characters
2512	Use Google format	Defines if messages are sent in MPTP or Google maps link format. Single functions may have individual setting for format!	0-1
2513	Use fixed position source	Defines if the position source data field value is always kept "GPS" for MPTP messages regardless what has been the original position source.	0= Variable 1=Fixed
2514	Hearbeat interval	Defines the hearbeat message interval in seconds when used connection mode is "always". Default is 600 sec.	120-86400 sec

2515	Default server IP address	Defines the Default Gateway IP address. Default TWIG Server.	0-60 character
2516	Default server port	Defines the default gateway port	0…5 numbers
2517	Default server protocol	Defines which protocol used in default IP gateway Default is MPTP	0=MPTP format 1=Google format
2518	Default server secure	Defines if GPRS connection is secured with SSL/TLS encryption or not.	0= No encryption 1= SSL/TLS encryption
2520	EMG server IP address	Defines the EMG message Gateway IP address. If not defined then EMG use Default server IP address	0-60 character
2521	EMG server port	Defines the EMG message gateway port	
2522	EMG server protocol	Defines which protocol used in EMG gateway. Default is MPTP	0=MPTP format 1=Google format
2523	EMG server secure	Defines if GPRS connection is secured with SSL/TLS encryption or not	0= No encryption 1= SSL/TLS encryption
2525	INF server IP address	Defines the INF message Gateway IP address. If not defined then INF use Default server IP address	0-60 character
2526	INF server port	Defines the INF message gateway port	0…5 numbers
2527	INF server protocol	Defines which protocol used in INF gateway. Default is MPTP	0=MPTP format 1=Google format
2528	INF server secure	Defines if GPRS connection is secured with SSL/TLS encryption or not	0= No encryption 1= SSL/TLS encryption
2535	Primary server connection	Define primary server connection. If primary connection is not available then used secondary.	0=WiFi 1=GPRS
2540	DNS1	Defines the primary GPRS network domain name server required by some networks	String of 0..16
2541	DNS2	Defines the secondary GPRS network domain name server required by some networks	String of 0..16
2542	Use forced GPRS acknowledge	When enabled, the device waits ACK from server before interpreting the GPRS message sent.	0=Disabled 1=Enabled

4.6.17. Settings 2550–2557,2770-2773 –Assistance call numbers and Call type

Defines the Assistance call numbers for voice call and call type. Defines also assistance message numbers. Settings can be sent in a same message with limitation of 5 settings or total length of message 160 characters depending on which is met first. The special fields of the command are as follows:

Setting ID	Field	Description	Range
2550	ASSIST CALL 1	Defines the call number	0-24 numbers
2551	ASSIST SMS 1	Defines the SMS number	0-24 numbers
2552	ASSIST CALL 2	Defines the call number	0-24 numbers
2553	ASSIST SMS 2	Defines the SMS number	0-24 numbers
2554	ASSIST CALL 3	Defines the call number	0-24 numbers
2555	ASSIST SMS 3	Defines the SMS number	0-24 numbers
2556	ASSIST CALL 4	Defines the call number	0-24 numbers
2557	ASSIST SMS 4	Defines the SMS number	0-24 numbers
2770	ASS CALL1Type	Defines the call type	0=Cellular 1=VoIP
2771	ASS CALL2Type	Defines the call type	0=Cellular 1=VoIP
2772	ASS CALL3Type	Defines the call type	0=Cellular 1=VoIP
2773	ASS CALL4Type	Defines the call type	0=Cellular 1=VoIP

4.6.18. **Settings 2760-2768 Assistance message type and message text**

Defines the Assistance message type and Assistance message text

Setting ID	Field	Description	Range
2760	ASSIST TYPE 1	Defines the key1 SMS type	0=MPTP 1=Google 2= Text Only
2761	ASSIST TYPE 2	Defines the key2 SMS type	0=MPTP 1=Google 2= Text Only
2762	ASSIST TYPE 3	Defines the key3 SMS type	0=MPTP 1=Google 2= Text Only
2763	ASSIST TYPE 4	Defines the key4 SMS type	0=MPTP 1=Google 2= Text Only
2765	ASSIST TXT 1	Defines the key1 Assistance text	0….60 character
2766	ASSIST TXT 2	Defines the key2 Assistance text	0….60 character
2767	ASSIST TXT 3	Defines the key3 Assistance text	0….60 character
2768	ASSIST TXT 4	Defines the key4 Assistance text	0….60 character

4.6.19. **Settings 2560–2562 –GPRS Server SMS backup numbers**

Defines the backup number to send messages via SMS if GPRS connection fails. Note that this can cause high transmission costs depending on the operator.

The special fields of the command are as follows:

Setting ID	Field	Description	Range
2560	SMS Backup for default server	Defines the SMS number for sending SMS if GPRS fails on server	0-24 numbers
2561	SMS Backup for emergency server	Defines the SMS number for sending SMS if GPRS fails on server	0-24 numbers
2562	SMS Backup for INF server	Defines the SMS number for sending SMS if GPRS fails on server	0-24 numbers

4.6.20. Settings 2601–2754 –White list numbers

Defines the Allowed numbers for SMS-based location request & tracking as well as allowed voice call numbers. Settings can be sent in same message with limitation of 5 settings or total length of message 160 characters depending which is met first. The special fields of the command are as follows:

Setting ID	Field	Description	Range
2601	White list number 1	Defines the CALL/SMS number	0-24 numbers
2602	WLN 1 LOC	Defines the WLN 1 SMS location request permission Default=1	0=denied 1=allowed
2603	WLN 1 TRG	Defines the WLN 1 SMS tracking request permission Default=1	0=denied 1=allowed
2604	WLN 1 CALL	Defines the WLN 1 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2611	White list number 2	Defines the CALL/SMS number	0-24 numbers
2612	WLN 2 LOC	Defines the WLN 2 SMS location request permission Default=1	0=denied 1=allowed
2613	WLN 2 TRG	Defines the WLN 2 SMS tracking request permission Default=1	0=denied 1=allowed
2614	WLN 2 CALL	Defines the WLN 2 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode

2621	White list number 3	Defines the CALL/SMS number	0-24 numbers
2622	WLN 3 LOC	Defines the WLN 3 SMS location request permission Default=1	0=denied 1=allowed
2623	WLN 3 TRG	Defines the WLN 3 SMS tracking request permission Default=1	0=denied 1=allowed
2624	WLN 3 CALL	Defines the WLN 3 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2631	White list number 4	Defines the CALL/SMS number	0-24 numbers
2632	WLN 4 LOC	Defines the WLN 4 SMS location request permission Default=1	0=denied 1=allowed
2633	WLN 4 TRG	Defines the WLN 4 SMS tracking request permission Default=1	0=denied 1=allowed
2634	WLN 4 CALL	Defines the WLN 4 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2641	White list number 5	Defines the CALL/SMS number	0-24 numbers
2642	WLN 5 LOC	Defines the WLN 5 SMS location request permission Default=1	0=denied 1=allowed
2643	WLN 5 TRG	Defines the WLN 5 SMS tracking request permission Default=1	0=denied 1=allowed
2644	WLN 5 CALL	Defines the WLN 5 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2651	White list number 6	Defines the CALL/SMS number	0-24 numbers
2652	WLN 6 LOC	Defines the WLN 6 SMS location request permission Default=1	0=denied 1=allowed
2653	WLN 6 TRG	Defines the WLN 6 SMS tracking request permission Default=1	0=denied 1=allowed
2654	WLN 6 CALL	Defines the WLN 6 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2661	White list number 7	Defines the CALL/SMS number	0-24 numbers
2662	WLN 7 LOC	Defines the WLN 7 SMS location request permission Default=1	0=denied 1=allowed
2663	WLN 7 TRG	Defines the WLN 7 SMS tracking request permission Default=1	0=denied 1=allowed

2664	WLN 7 CALL	Defines the WLN 7 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2671	White list number 8	Defines the CALL/SMS number	0-24 numbers
2672	WLN 8 LOC	Defines the WLN 8 SMS location request permission Default=1	0=denied 1=allowed
2673	WLN 8 TRG	Defines the WLN 8 SMS tracking request permission Default=1	0=denied 1=allowed
2674	WLN 8 CALL	Defines the WLN 8 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2681	White list number 9	Defines the CALL/SMS number	0-24 numbers
2682	WLN 9 LOC	Defines the WLN 9 SMS location request permission Default=1	0=denied 1=allowed
2683	WLN 9 TRG	Defines the WLN 9 SMS tracking request permission Default=1	0=denied 1=allowed
2684	WLN 9 CALL	Defines the WLN 9 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2691	White list number 10	Defines the CALL/SMS number	0-24 numbers
2692	WLN 10 LOC	Defines the WLN 10 SMS location request permission Default=1	0=denied 1=allowed
2693	WLN 10 TRG	Defines the WLN 10 SMS tracking request permission Default=1	0=denied 1=allowed
2694	WLN 10 CALL	Defines the WLN 10 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2701	White list number 11	Defines the CALL/SMS number	0-24 numbers
2702	WLN 11 LOC	Defines the WLN 11 SMS location request permission Default=1	0=denied 1=allowed
2703	WLN 11 TRG	Defines the WLN 11 SMS tracking request permission Default=1	0=denied 1=allowed
2704	WLN 11 CALL	Defines the WLN 11 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2711	White list number 12	Defines the CALL/SMS number	0-24 numbers

2712	WLN 12 LOC	Defines the WLN 12 SMS location request permission Default=1	0=denied 1=allowed
2713	WLN 12 TRG	Defines the WLN 12 SMS tracking request permission Default=1	0=denied 1=allowed
2714	WLN 12 CALL	Defines the WLN 12 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2721	White list number 13	Defines the CALL/SMS number	0-24 numbers
2722	WLN 13 LOC	Defines the WLN 13 SMS location request permission Default=1	0=denied 1=allowed
2723	WLN 13 TRG	Defines the WLN 13 SMS tracking request permission Default=1	0=denied 1=allowed
2724	WLN 13 CALL	Defines the WLN 13 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2731	White list number 14	Defines the CALL/SMS number	0-24 numbers
2732	WLN 14 LOC	Defines the WLN 14 SMS location request permission Default=1	0=denied 1=allowed
2733	WLN 14 TRG	Defines the WLN 14 SMS tracking request permission Default=1	0=denied 1=allowed
2734	WLN 14 CALL	Defines the WLN 14 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2741	White list number 15	Defines the CALL/SMS number	0-24 numbers
2742	WLN 15 LOC	Defines the WLN 15 SMS location request permission Default=1	0=denied 1=allowed
2743	WLN 15 TRG	Defines the WLN 15 SMS tracking request permission Default=1	0=denied 1=allowed
2744	WLN 15 CALL	Defines the WLN 15 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode
2751	White list number 16	Defines the CALL/SMS number	0-24 numbers
2752	WLN 16 LOC	Defines the WLN 16 SMS location request permission Default=1	0=denied 1=allowed
2753	WLN 16 TRG	Defines the WLN 16 SMS tracking request permission Default=1	0=denied 1=allowed

2754	WLN 16 CALL	Defines the WLN 16 Call permissions Default=1	0=blocked 1=allowed 2=auto answer 3=auto answer in HF mode

4.6.21.   Settings 2800–2808,2845-2848 –Amber Alert / Condition Check settings

Defines the Amber Alert / Condition Check settings. Settings can be sent in same message with limitation of 5 settings or total length of message 160 characters depending which is met first. Condition Check function is separately activated like any other process.

The special fields of the command are as follows:

Setting ID	Field	Description	Range
2800	Amber Alert mode	Defines the mode of function. Default 0 Mode 3 and 4 N/A currently	0=OFF, 1=Interactive, 2=local, (3=remote) (4=automatic)
2801	Amber Alert Type	Defines the activation mode whether SMS or voice call. Default 1	1=SMS, 0=CALL
2802	Amber Alert / Condition Check ACK	Defines in REMOTE mode if Acknowledge is needed. N/A currently	0= NO 1=YES
2803	Amber Alert Activation Number	Defines the number that is used for Amber alert Activation whether SMS or Call is used	0-24 numbers
2804	Amber Alert Deactivation Number	Defines the number that is used for Amber alert Deactivation whether SMS or Call is used	0-24 numbers
2805	Amber alert Pre-alarm time.	Defines Pre-alarm time to Acknowledge in the handset the Amber alert timer to clear alarm	1..9 minutes
2806	Amber alert Automatic mode time	Defines automatic mode time. N/A currently	0..65534 seconds
2807	Amber alert time	Defines the default time when Amber alert is activated. In devices where time can't be changed from UI this time only is used.	2-120 minutes

2808	Amber alert call number	Defines the phone number which the device calls after thaving sent an activation request message to the activation phone number (only available with interactive mode).	0-24 numbers
2809	Keypad control	If enabled the Amber alert enables the selection of phone number type (see command 2801) .	0=Disable 1=Enable
2845	Amber alert timer menu Start time	Defines the time value of the first selectable time of the Amber alert timer.	30-3600 sec
2846	Amber alert timer menu Time step	Defines the time value between the next selectable time steps of the Amber alert timer.	30-3600 sec
2847	Amber alert timer menu Number of items	Defines the amount of selectable time value alternatives displayed in the Amber alert timer menu.	1-5
2848	Call type	Defines the Amber alert call type	0=cellular 1=VoIP

4.6.22. Settings 2810–2842 –Internal MPTP commands settings

Defines MPTP command to be executed in the device. This allows to store e.g. Tracking interval and recipient. When start condition is met, MPTP command is executed and Tracking started. This could be in emergency cycle "post emergency mode"

The setting can be configured locally with PC tool and activated or mode changed remotely. The "_" underline character CAN NOT be configured over the air.

A character translation was added for underline- and hash-characters of MPTP CNF/PSR commandsconcerning TWIG Embody and TWIG Bracer devices. In MPTP protocol 'underline' and 'hash' characters are field separators and should therefore never be used in the middle of string fields. Device interprets MPTP message character ´[´ (square bracket) as ´_´ (underline character) and character ´]´(square bracket) as ´#´ (hashtag) character. The added character translation enables e.g. internal MPTP command configuration/reading remotely via GPRS.

	MPTP message character	**Device Interprets**
?CNF/!PSR	**[**	_
?CNF/!PSR	**]**	**#**

Examples:

Programming of the command ?TRG_7_1_5 with the command 2812 to the first internal MPTP command field ?CNF_01/01_2812_?TRG[7[1[5

The special fields of the command are as follows:

Setting ID	Field	Description	Range
2810	MPTP mode	Defines the mode of #1 internal command. Default =0	0=OFF, 1=Power On, 2=On Post emergency
2811	MPTP recipient number	Defines the number for MPTP messages to be sent.	0-24 numbers
2812	MPTP Command	Defines the actual MPTP command to be executed . Note that "_" can not be sent OTA.	0-60 characters
2820	MPTP mode	Defines the mode of #2 internal command. Default =0	0=OFF, 1=Power On, 2=On Post emergency
2821	MPTP recipient number	Defines the number for MPTP messages to be sent.	0-24 numbers
2822	MPTP Command	Defines the actual MPTP command to be executed . Note that "_" can not be sent OTA.	0-60 characters
2830	MPTP mode	Defines the mode of #3 internal command. Default =0	0=OFF, 1=Power On, 2=On Post emergency
2831	MPTP recipient number	Defines the number for MPTP messages to be sent.	0-24 numbers
2832	MPTP Command	Defines the actual MPTP command to be executed . Note that "_" can not be sent OTA.	0-60 characters
2840	MPTP mode	Defines the mode of #4 internal command. Default =0	0=OFF, 1=Power On, 2=On Post emergency
2841	MPTP recipient number	Defines the number for MPTP messages to be sent.	0-24 numbers

| 2842 | MPTP Command | Defines the actual MPTP command to be executed . Note that "_" can not be sent OTA. | 0-60 characters |

4.6.23.   Settings 2850-2852 TWIG Self-Test settings

Defines the TWIG Self-Test settings. If TWIG Self-Test enabled then On device power-up, initiates Self-Test for device SOS button, ManDown function, TWIG Button and TWIG Beacon, and sends Self-Test report to Central Station.

2850	TWIG Self-Test enabled	Defines the number for MPTP messages to be sent.	0=disabled 1=enabled
2851	TWIG Self-Test procedure control	Defines if ACK needed for TWIG Self-Test procedure	0=No ACK 1=ACK
2852	PWR off when docked	Defines if unit is sending a request to power off when set to desk charging station CTA81 ("dock"). Power Off –command is sent from Central Station.	0=Disable 1=Enable

4.6.24.   Settings 2860-2868 Short Range Devices (SRD) settings

Defines settings for operating with Short Range Devices

2860	SRD transceiver sleep time	Defines SRD transceiver sleep time for TWIG Beacon reception. If the value is set to 0, the SRD transceiver is listening to TWIG Beacons continuously. Note that it effects the power consumption. Default is 10 sec.	Range 0…4min
2861	Beacon search time	Defines the maximum time the Beacon signals are monitored.. Default is 5 sec	0-14 sec
2862	Beacon low battery warning	Defines if unit is forwarding a low battery message when received from Beacon	0-1
2863	Beacon location	Defines if the SRD Beacons messages are listened by the receivers in TWIG	0-1

2864	TAG	Enables TAG reading and data forwarding to Service center.	0-1
2865	Show beacon name on display	Defines if the received SRD Beacon name showed on display or not	0= not displayed 1=displayed
2866	Beacon Sort & Send	Defines how beacons data is sorted and sent Default value 0	0= Two groups,send many
			1=Send only strongest
			2= One group send many
			3= Send strongest within search time
2867	BLEBeacon name filtering	Define string which search from BLE beacons and Wi-Fi data.	0…32 character
2868	Enabling BLE beacon scan	Defines if BLE beacons scanning enabled or not. Default 0	0=Disabled 1=Enabled
2869	Enabling Wi-Fi AP scan	Defines if Wi-Fi acces point scanning enabled or not. Default 0	0=Disabled 1=Enabled
2870	Beacon data preserve time	Defines how long beacon data is valid. (does not apply "raw data messages")	0..65534sec

4.6.25.   Settings 4000-4059 Wi-Fi connection

Defines general Wi-Fi connection settings.

4000	Wi-Fi mode	Defines if Wi-Fi connection is used or not. Default is OFF	0=OFF 1=ON
4010	Network 1 SSID	Defines SSID for Wi-Fi Network 1	(string max 32 char, base 64)
4011	Network 1 password	Defines password for Wi-Fi Network 1 (Notice that !PSR return ***** or empty)	(string max 64 char, base 64)
4012	Network 1 authentication type	Defines authentication type for Wi-Fi Network 1	0=Open 1=WPA 2=WEP 3=802_1X 4=WPA2 5=WPA_WPA2 6=WPA2_ENTE RPRISE
4020	Network 2 SSID	Defines SSID for Wi-Fi Network 2	(string max 32 char, base 64)
4021	Network 2 password	Defines password for Wi-Fi Network 2 (Notice that !PSR return ***** or empty)	(string max 64 char, base 64)

4022	Network 2 authentication type	Defines authentication type for Wi-Fi Network 2	0=Open 1=WPA 2=WEP 3=802_1X 4=WPA2 5=WPA_WPA2 6=WPA2_ENTE RPRISE
4030	Network 3 SSID	Defines SSID for Wi-Fi Network 3	(string max 32 char, base 64)
4031	Network 3 password	Defines password for Wi-Fi Network 3 (Notice that !PSR return ***** or empty)	(string max 64 char, base 64)
4032	Network 3 authentication type	Defines authentication type for Wi-Fi Network 3	0=Open 1=WPA 2=WEP 3=802_1X 4=WPA2 5=WPA_WPA2 6=WPA2_ENTE RPRISE
4040	Network 4 SSID	Defines SSID for Wi-Fi Network 4	(string max 32 char, base 64)
4041	Network 4 password	Defines password for Wi-Fi Network 4 (Notice that !PSR return ***** or empty)	(string max 64 char, base 64)
4042	Network 4 authentication type	Defines authentication type for Wi-Fi Network 4	0=Open 1=WPA 2=WEP 3=802_1X 4=WPA2 5=WPA_WPA2 6=WPA2_ENTE RPRISE
4050	Network 5 SSID	Defines SSID for Wi-Fi Network 5	(string max 32 char, base 64)
4051	Network 5 password	Defines password for Wi-Fi Network 5 (Notice that !PSR return ***** or empty)	(string max 64 char, base 64)
4052	Network 5 authentication type	Defines authentication type for Wi-Fi Network 5	0=Open 1=WPA 2=WEP 3=802_1X 4=WPA2 5=WPA_WPA2 6=WPA2_ENTE RPRISE

4.6.26.   **Settings 4100-4114 VoIP**

4100	VoIP Mode	Defines if VoIP call is enabled and if it is enabled only for outgoing calls or both for outgoing and incoming calls.	0=Off 1=Outgoing/In-coming calls 2=Outgoing calls only
4110	Server URL	Defines VoIP server URL	string max 64 char,
4111	Server Port	Defines VoiP server port	String max 5 char
4112	Number	Defines device VoIP number	Max 64 char
4113	Password	Defines device VoIP password (Notice that !PSR return ***** or empty)	(string max 64 char, base 64)

4.7. Persistent setting request (?PSR)

CS → MTT

There are a multitude of persistent settings, many of which are specific to certain instrument models only.

Each persistent setting has a reference number. With a persistent setting request MPTP command Central Station can check the current settings of the MTT.

Reception

Upon receiving a persistent setting request command the terminal will send a persistent setting report containing the setting values of requested settings. Cf. 4.8 for more information about persistent setting report.

Depending on the authorization of the Central Station which requested the action, the action may be performed automatically or the request may be disregarded altogether. Cf. section 2.1.3 for more information.

Command format

Co mm and *		Par t nu mb er*		Set ting ID		Set ting ID		Set ting ID	
									…
4	1	5	1	4	1	4	1	4	…
?PSR		01/01		0060		0051		0068	…

*) cf. section 3.1 for description of these fields.

Request command can ask up to 5 settings or total length of message 160 characters depending which is met first in one message. This is done by adding several Setting IDs in one message. For available Setting ID's cf. 4.6 and 4.8.

4.8. Persistent setting report (!PSR)

CS → MTT

There are a multitude of persistent settings, many of which are specific to certain instrument models only.

Each persistent setting has a reference number. A persistent setting report MPTP command always starts in the same way, with the Setting ID parameter determining the format of the rest of the command.

Command *		Setting ID		…
4	1	4	1	…
!PSR		0060		…

*) cf. section 3.1 for description of these fields.

A special feature of persistent setting report commands is that several settings can be sent in one message. This is done by adding several Setting IDs and their parameters in one message. For example to send GPS sleep time and GPS max search time in one message the message could look like following. !PSR_2020_600_2021_300

The settings and parameters of persistent setting report are formatted in the same way as in ?CNF (cf. 4.6). There is only one Setting ID which can be used only with Persistent setting request, only one that cannot be, and rest of them can be used for setting and checking the settings.

For the format of most of the persistent setting reports cf. 4.6. Command is of course replaced with !PSR.

4.9. Reset terminal request (?RST)

CS → MTT

This command can be used to reset or turn off the terminal remotely. Resetting terminal means that it is switched off and on again after a while. The command can also be used to reset the device to factory defaults Reception.

Upon receiving a reset terminal request command the terminal will power off and on again after few minutes or the terminal just turn off. This is done even if the terminal is connected to charger.

Depending on the authorization of the Central Station which requested the action, the action may be performed automatically or the request may be disregarded altogether. Cf. section 2.1.3 for more

information. If a parameter is included it may also change settings of the device or reset to factory settings

Command format

Length: 6 characters

Command *		Action
4	1	8
?RST		0

*) cf. section 3.1 for description of this field.

The special fields of the command are as follows:

Field	Description	Range
Action	Action to be performed after receiving the message.	0..8
	0: Power off and on again.	
	1: GPS Factory reset (almanac, ephemeris, location, time)	
	2: GPS Ephemeris reset	
	8-digits from the END of device IMEI resets the device to software default values. **This wipes all customer programming from the unit**	
	TRG12345678	
	TRG+ 8-digits from end of IMEI deletes all tracking processes in the device	
	PWROFF12345678	
	PWROFF+8-digits from end of IMEI turn device off.	

5. TABLE OF CONFIGURATION MESSAGES (CNF)

Each type of device or its Firmware version may have only a subset of commands supported. It is advisable always to load latest FW to the device prior to programming. Below a list of versions supporting the commands below. The 4th digit of SW version may vary depending on the device model. Likewise models with limited UI may support only subset of commands. As example Protector Easy has only one Assistance number due to missing keys in the keyboard.

Supported TWIG instruments and SW versions:
TWIG Protector TCP90EU CT1X.01.047.0000
TWIG Protector TUP90EU CT3X.01.036.0000
TWIG Embody TUP91EU CT4W.01.057.0000
TWIG Protector TUP92EU CT4P.01.057.0000
TWIG SOS Card TUP93EU CT4B,01.057.0000
TWIG Bracer RG310
TWIG Protector One TLP50EU /TLP51EU/TLP53EU
TWIG Neo TLP52EU/TLP54EU

CNF	Description	Note	TCP90EU	TUP90EU	TUP91EU	TUP92EU	RG310	TUP93EU	TLP50/53	TLP52/54
2001	SIM Card PIN Code		x	x	x	x		x	x	x
2002	Generic application sound level		x							
2003	Lost GSM beep		x	x	x	x	x	x	x	x
2004	White list usage		x	x	x	x	x	x	x	x
2005	Service Center		x	x	x	x		x	x	x
2006	MPTP header translation		x	x	x	x	x	x	x	x
2007	Automatic answer		x	x	x	x	x	x	x	x
2008	Power off disabled		x	x	x	x		x	x	x
2009	Power saving mode	Only Asset Locator	x	x	x	x		x	x	x
2010	Generic Vibration use		x	x	x	x		x		
2011	Generic backlight use		x	x	x	x		x		
2012	On Screen Message tone		x	x	x	x	x	x	x	x
2013	Power OFF when connected to charging station		x	x	x	x		x		
2014	Power ON when disconnected from charging station		x	x	x	x		x		
2015	Mobile network mode								x	x
2016	VoLTE mode	Only VoLTE devices							x	x
2019	Incoming call reject/end				x	x		x	x	x
2020	GPS sleep time		x	x	x	x		x	x	x
2021	GPS max search time		x	x	x	x		x	x	x
2022	GPS AGPS usage		x	x	x	x		x	x	x
2023	GPS motion sensitive ON		x	x	x	x		x	x	x
2024	GPS motion sensivity		x	x	x	x		x	x	x
2025	GPS Powermode				x	x		x	x	x

CNF	Description	Note	TCP90EU	TUP90EU	TUP91EU	TUP92EU	RG310	TUP93EU	TLP50EU	TLP52EU
2026	GPS/GNSS position validity period				x	x		x	x	x
2030	Normal environment Earpiece volume			x	x	x		x	x	x
2031	Normal environment Tone volume			x	x	x	X	x	x	x
2032	Normal environment Vibration usage			x	x	x		x	x	x
2033	Normal environment Light usage			x	x	x		x	x	x
2035	Hands Free environment Earpiece volume			x	x	x		x	x	x
2036	Hands Free environment Tone volume			x	x	x	X	x	x	x
2037	Hands Free environment Vibration usage			x	x	x	X	x	x	x
2038	Hands Free environment Light usage			x	x	x		x	x	x
2040	SOS key environment Earpiece volume			x	x	x		x	x	x
2041	SOS key environment Tone volume			x	x	x	X	x	x	x
2042	SOS key environment Vibration usage			x	x	x	X	x	x	x
2043	SOS key environment Light usage			x	x	x		x	x	x
2044	SOS key environment Tone			x	x	x	X	x	x	x
2045	TWIG Button environment Earpiece volume			x	x	x		x	x	x
2046	TWIG Button environment Tone volume			x	x	x		x	x	x
2047	TWIG Button environment Vibration usage			x	x	x		x	x	x
2048	TWIG Button environment Light usage			x	x	x		x	x	x
2049	TWIG Button environment Tone			x	x	x		x	x	x
2050	ManDown environment Earpiece volume			x	x	x		x	x	x
2051	ManDown environment Tone volume			x	x	x	X	x	x	x
2052	ManDown environment Vibration usage			x	x	x	X	x	x	x
2053	ManDown environment Light usage			x	x	x		x	x	x
2054	ManDown environment Tone			x	x	x	X	x	x	x
2055	AmberAlert environment Earpiece volume			x	x	x		x	x	x
2056	AmberAlert environment Tone volume			x	x	x	X	x	x	x
2057	AmberAlert environment Vibration usage			x	x	x	X	x	x	x
2058	AmberAlert environment Light usage			x	x	x		x	x	x
2059	AmberAlert environment Tone			x	x	x	X		x	x
2060	Display duration				x			x	x	x
2061	Display clock				x			x		x
2062	Clock time displaying duration				x			x	x	x
2063	Clock time offset				x			x	x	x
2065	Clock Contrast				x			x		x
2066	Orientation				x			x		x
2067	DST				x			x	x	x
2068	Display Date				x			x		x
2070	Easy Mode GSM status text	Since FW CT5P1.056.0000								x
2071	Easy Mode GNSS status text	Since FW CT5P1.056.0000								x
2072	Easy Mode Battery status text	Since FW CT5P1.056.0000								x
2080	Ripcord environment Earpiece volume				x			x		x
2081	Ripcord environment Tone volume				x			x		x
2082	Ripcord environment Vibration usage				x			x		x

CNF	Description	Note	TCP90EU	TUP90EU	TUP91EU	TUP92EU	RG310	TUP93EU	TLP50EU	TLP52EU
2083	Ripcord environment Light usage				x			x		x
2084	Ripcord environment Tone volume				x			x		x
2085	Loudspeaker gain	Since FW CT5P1.058.0000							x	x
2086	Hands-free microphone gain	Since FW CT5P1.058.0000							x	x
2090	Normal environment Mute button tone				x	x		x	x	x
2091	Hands Free environment Mute button tone				x	x		x	x	x
2092	SOS key environment Mute button tone				x	x		x	x	x
2093	TWIG Button environment Mute button tone				x	x		x	x	x
2094	ManDown environment Mute button tone				x	x		x	x	x
2095	Amber alert environment Mute button tone				x	x		x	x	x
2096	Ripcord environment Mute button tone				x			x		x
2097	Function key 1				x			x	x	x
2098	Function key 2				x			x	x	x
2099	UI button method				x			x	x	x
2101	Low Battery		x	x	x	x	X	x	x	x
2102	Docked		x	x	x	x	X	x	x	x
2103	UnDocked		x	x	x	x	X	x	x	x
2104	Power on		x	x	x	x	X	x	x	x
2105	Power off		x	x	x	x		x	x	x
2106	MDA ON/OFF		x	x	x	x	X	x	x	x
2107	Mandown prealarm				x	x		x	x	x
2110	Silent incoming/outgoing call initiation				x	x		x	x	x
2111	Hide calls number				x	x		x	x	x
2112	Haptic vibra feedback				x			x	x	x
2113	Low battery warning mode				x	x		x	x	x
2118	Menu Key [item1]								x	x
2119	Menu Key [item2]								x	x
2120	Menu Key [item3]								x	x
2121	Menu Key [item4]								x	x
2122	Menu Key [item5]								x	x
2123	Menu Key [item6]								x	x
2124	Menu Key [item7]								x	x
2125	Menu Key [item8]								x	x
2126	Menu Key [item9]								x	x
2127	Menu Key [item10]								x	x
2128	Menu Key [item11]								x	x
2129	Menu Key [item12]								x	x
2130	Menu Key [item13]								x	x
2131	Menu Key [item14]								x	x
2132	Menu Key [item15]								x	x
2201	SOS Key activation mode		x	x	x	x	X	x	x	x
2202	Activation method timeout		x	x	x	x	X	x	x	x
2203	GPS ON time		x	x	x	x	X	x	x	x
2204	Cancellation period		x	x	x	x	X	x	x	x
2205	END key timeout		x	x	x	x	X	x	x	x
2206	PostEMG usage		x	x	x	x	X	x	x	x

CNF	Description	Note	TCP90EU	TUP90EU	TUP91EU	TUP92EU	RG310	TUP93EU	TLP50EU	TLP52EU
2211	Displays		x	x	x	x	x	x	x	x
2212	Vibrator		x	x	x	x	x	x	x	x
2213	Application sound level		x							
2214	Speaker level		x							
2301	Event type 1		x	x	x	x	x	x	x	x
2302	Number		x	x	x	x	x	x	x	x
2303	Name		x	x	x	x	x	x	x	x
2304	Event retries		x	x	x	x	x	x	x	x
2305	Event group		x	x	x	x	x	x	x	x
2306	SOS text	Since FW CT5P1.060.0000							x	x
2311	Event type 2		x	x	x	x	x	x	x	x
2312	Number		x	x	x	x	x	x	x	x
2313	Name		x	x	x	x	x	x	x	x
2314	Event retries		x	x	x	x	x	x	x	x
2315	Event group		x	x	x	x	x	x	x	x
2316	SOS text	Since FW CT5P1.060.0000							x	x
2321	Event type 3		x	x	x	x	x	x	x	x
2322	Number		x	x	x	x	x	x	x	x
2323	Name		x	x	x	x	x	x	x	x
2324	Event retries		x	x	x	x	x	x	x	x
2325	Event group		x	x	x	x	x	x	x	x
2326	SOS text	Since FW CT5P1.060.0000							x	x
2331	Event type 4		x	x	x	x	x	x	x	x
2332	Number		x	x	x	x	x	x	x	x
2333	Name		x	x	x	x	x	x	x	x
2334	Event retries		x	x	x	x	x	x	x	x
2335	Event group		x	x	x	x	x	x	x	x
2336	SOS text	Since FW CT5P1.060.0000							x	x
2341	Event type 5		x	x	x	x	x	x	x	x
2342	Number		x	x	x	x	x	x	x	x
2343	Name		x	x	x	x	x	x	x	x
2344	Event retries		x	x	x	x	x	x	x	x
2345	Event group		x	x	x	x	x	x	x	x
2346	SOS text	Since FW CT5P1.060.0000							x	x
2351	Event type 6		x	x	x	x	x	x	x	x
2352	Number		x	x	x	x	x	x	x	x
2353	Name		x	x	x	x	x	x	x	x
2354	Event retries		x	x	x	x	x	x	x	x
2355	Event group		x	x	x	x	x	x	x	x
2356	SOS text	Since FW CT5P1.060.0000							x	x
2361	Event type 7		x	x	x	x	x	x	x	x
2362	Number		x	x	x	x	x	x	x	x
2363	Name		x	x	x	x	x	x	x	x

CNF	Description	Note	TCP90EU	TUP90EU	TUP91EU	TUP92EU	RG310	TUP93EU	TLP50EU	TLP52EU
2364	Event retries		x	x	x	x	x	x	x	x
2365	Event group		x	x	x	x	x	x	x	x
2366	SOS text	Since FW CT5P1.060.0000							x	x
2371	Event type 8		x	x	x	x	x	x	x	x
2372	Number		x	x	x	x	x	x	x	x
2373	Name		x	x	x	x	x	x	x	x
2374	Event retries		x	x	x	x	x	x	x	x
2375	Event group		x	x	x	x	x	x	x	x
2376	SOS text	Since FW CT5P1.060.0000							x	x
2381	Event type 9		x	x	x	x	x	x	x	x
2382	Number		x	x	x	x	x	x	x	x
2383	Name		x	x	x	x	x	x	x	x
2384	Event retries		x	x	x	x	x	x	x	x
2385	Event group		x	x	x	x	x	x	x	x
2386	SOS text	Since FW CT5P1.060.0000							x	x
2391	Event type 10		x	x	x	x	x	x	x	x
2392	Number		x	x	x	x	x	x	x	x
2393	Name		x	x	x	x	x	x	x	x
2394	Event retries		x	x	x	x	x	x	x	x
2395	Event group		x	x	x	x	x	x	x	x
2396	SOS text	Since FW CT5P1.060.0000							x	x
2400	MPTP SOS Text		x	x	x	x	x	x	x	x
2401	MPTP MD Text		x	x	x	x	x	x	x	x
2402	MPTP RF SOS Text		x	x	x	x		x	x	x
2403	MPTP Amber Alert SOS text		x	x	x	x	x	x	x	x
2404	MPTP Ripcord SOS text			x		x		x		x
2405	Wireless alert unit 1		x	x	x	x		x	x	x
2406	Wireless alert unit 2		x	x	x	x		x	x	x
2407	Wireless alert unit 3		x	x	x	x		x	x	x
2408	Wireless alert unit 4		x	x	x	x		x	x	x
2409	Wireless alert unit 5		x	x	x	x		x	x	x
2420	Event start delay		x	x	x	x	x	x	x	x
2421	Call timeout		x	x	x	x	x	x	x	x
2422	Full SOS cycles		x	x	x	x	x	x	x	x
2423	Emergency number text		x	x	x	x	x	x	x	x
2424	MPTP ACK response time		x	x	x	x	x	x	x	x
2425	SOS call continue		x	x	x	x	x	x	x	x
2426	Power off button disabled		x	x		x		x	x	x
2427	Ripcord alert enabled					x		x		x
2428	Replug cancelation enabled					x		x		x
2430	Post emergency beep		x	x	x	x	x	x	x	x
2440	ManDown Alerts when		x	x	x	x	x	x	x	x
2441	ManDown Sensor usage		x	x	x	x	x	x	x	x
2442	ManDown No Alarm duration		x	x	x	x	x	x	x	x

CNF	Description	Note	TCP90EU	TUP90EU	TUP91EU	TUP92EU	RG310	TUP93EU	TLP50EU	TLP52EU
2443	ManDown Pre alarm duration		x	x	x	x	x	x	x	x
2444	ManDown Motion sensitivity		x	x	x	x	x	x	x	x
2445	ManDown Angle		x	x	x	x	x	x	x	x
2450	ManDown normal status delay		x	x	x	x	x	x	x	x
2451	ManDown restart			x	x	x	x	x	x	x
2452	ManDown + No movement duration	Not TWIG Sure		x	x	x	x	x	x	x
2453	ManDown ++ Freefall					x	x		x	x
2454	ManDown ++ Impact					x	x		x	x
2455	ManDown pre-alarm cancel enabled						x		x	x
2455	ManDown Torch flash							x		
2456	ManDown Pause time					x		x	x	x
2457	ManDown Start time								x	x
2458	ManDown Time step								x	x
2459	ManDown Number of menu items								x	x
2500	GPRS usage		x	x	x	x	x	x	x	x
2501	USER ID		x	x	x	x	x	x	x	x
2502	Service Number		x	x	x	x	x	x	x	x
2503	IP address (number)		x							
2504	Server port		x							
2505	GPRS APN		x	x	x	x		x	x	x
2506	User name		x	x	x	x		x	x	x
2507	Password		x	x	x	x		x	x	x
2508	International Roaming block		x	x	x	x		x	x	x
2509	Reconnect interval		x	x	x	x	x	x	x	x
2510	Connection mode		x	x	x	x	x	x	x	x
2511	IP name		x							
2512	Use Google format	all devices toSMS format	x	x	x	x	x	x	x	x
2513	Use fixed position source					x	x		x	x	x
2514	Heartbeat interval								x	x
2515	Default Server IP name			x	x	x	x	x	x	x
2516	Default Server port			x	x	x	x	x	x	x
2517	Default Server protocol			x	x	x	x	x	x	x
2518	Default server secure				x	x		x	x	x
2520	EMG Server IP name			x	x	x	x	x	x	x
2521	EMG Server port			x	x	x	x	x	x	x
2522	EMG Server protocol			x	x	x	x	x	x	x
2523	EMG server secure				x	x		x	x	x
2525	INF Server IP name			x	x	x	x	x	x	x
2526	INF Serverport			x	x	x	x	x	x	x
2527	INF Server protocol			x	x	x	x	x	x	x
2528	INF Server secure				x	x		x	x	x
2535	Primary server connection	TLP5x Since FW ver CT5P2.0….							x	x
2540	DNS 1		x	x	x	x		x	x	x
2541	DNS 2		x	x	x	x		x	x	x
2542	Use forced GPRS acknowledge					x	x		x	x	x
2550	1 Assistance Call phonenumber		x	x	x	x	x	x	x	x

CNF	Description	Note	TCP90EU	TUP90EU	TUP91EU	TUP92EU	RG310	TUP93EU	TLP50EU	TLP52EU
2551	1 Assistance SMS phonenumber		x	x	x	x	x	x	x	x
2552	2 Assistance Call phonenumber	Not Easy & Sure	x	x		x	x		x	x
2553	2 Assistance SMSphonenumber	Not Easy & Sure	x	x		x	x		x	x
2554	3 Assistance Call phonenumber	Not Easy & Sure	x	x		x	x		x	
2555	3 Assistance SMS phonenumber	Not Easy & Sure	x	x		x	x		x	
2556	4 Assistance Call phonenumber	Not Easy & Sure	x	x		x	x		x	
2557	4 Assistance SMS phonenumber	Not Easy & Sure	x	x		x	x		x	
2560	SMS backup for server Default				x	x	x	x	x	x
2561	SMS backup for server EMG				x	x	x	x	x	x
2562	SMS backup for server INF				x	x	x	x	x	x
2601	White list number 1		x	x		x	x	x	x	x
2602	Whitelist LOQ		x	x	x	x	x	x	x	x
2603	Whitelist TRG		x	x	x	x	x	x	x	x
2604	Whitelist CALL		x	x	x	x	x	x	x	x
2611	White list number 2		x	x	x	x	x	x	x	x
2612	Whitelist LOQ		x	x	x	x	x	x	x	x
2613	Whitelist TRG		x	x	x	x	x	x	x	x
2614	Whitelist CALL		x	x	x	x	x	x	x	x
2621	White list number 3		x	x	x	x	x	x	x	x
2622	Whitelist LOQ		x	x	x	x	x	x	x	x
2623	Whitelist TRG		x	x	x	x	x	x	x	x
2624	Whitelist CALL		x	x	x	x	x	x	x	x
2631	White list number 4		x	x	x	x	x	x	x	x
2632	Whitelist LOQ		x	x	x	x	x	x	x	x
2633	Whitelist TRG		x	x	x	x	x	x	x	x
2634	Whitelist CALL		x	x	x	x	x	x	x	x
2641	White list number 5		x	x	x	x	x	x	x	x
2642	Whitelist LOQ		x	x	x	x	x	x	x	x
2643	Whitelist TRG		x	x	x	x	x	x	x	x
2644	Whitelist CALL		x	x	x	x	x	x	x	x
2651	White list number 6		x	x	x	x	x	x	x	x
2652	Whitelist LOQ		x	x	x	x	x	x	x	x
2653	Whitelist TRG		x	x	x	x	x	x	x	x
2654	Whitelist CALL		x	x	x	x	x	x	x	x
2661	White list number 7		x	x	x	x	x	x	x	x
2662	Whitelist LOQ		x	x	x	x	x	x	x	x
2663	Whitelist TRG		x	x	x	x	x	x	x	x
2664	Whitelist CALL		x	x	x	x	x	x	x	x
2671	White list number 8		x	x	x	x	x	x	x	x
2672	Whitelist LOQ		x	x	x	x	x	x	x	x
2673	Whitelist TRG		x	x	x	x	x	x	x	x
2674	Whitelist CALL		x	x	x	x	x	x	x	x
2681	White list number 9		x	x	x	x	x	x	x	x
2682	Whitelist LOQ		x	x	x	x	x	x	x	x
2683	Whitelist TRG		x	x	x	x	x	x	x	x
2684	Whitelist CALL		x	x	x	x	x	x	x	x
2691	White list number 10		x	x	x	x	x	x	x	x

CNF	Description	Note	TCP90EU	TUP90EU	TUP91EU	TUP92EU	RG310	TUP93EU	TLP50EU	TLP52EU
2692	Whitelist LOQ		x	x	x	x	x	x	x	x
2693	Whitelist TRG		x	x	x	x	x	x	x	x
2694	Whitelist CALL		x	x	x	x	x	x	x	x
2701	White list number 11		x	x	x	x	x	x	x	x
2702	Whitelist LOQ		x	x	x	x	x	x	x	x
2703	Whitelist TRG		x	x	x	x	x	x	x	x
2704	Whitelist CALL		x	x	x	x	x	x	x	x
2711	White list number 12		x	x	x	x	x	x	x	x
2712	Whitelist LOQ		x	x	x	x	x	x	x	x
2713	Whitelist TRG		x	x	x	x	x	x	x	x
2714	Whitelist CALL		x	x	x	x	x	x	x	x
2721	White list number 13		x	x	x	x	x	x	x	x
2722	Whitelist LOQ		x	x	x	x	x	x	x	x
2723	Whitelist TRG		x	x	x	x	x	x	x	x
2724	Whitelist CALL		x	x	x	x	x	x	x	x
2731	White list number 14		x	x	x	x	x	x	x	x
2732	Whitelist LOQ		x	x	x	x	x	x	x	x
2733	Whitelist TRG		x	x	x	x	x	x	x	x
2734	Whitelist CALL		x	x	x	x	x	x	x	x
2741	White list number 15		x	x	x	x	x	x	x	x
2742	Whitelist LOQ		x	x	x	x	x	x	x	x
2743	Whitelist TRG		x	x	x	x	x	x	x	x
2744	Whitelist CALL		x	x	x	x	x	x	x	x
2751	White list phonenumber 16		x	x	x	x	x	x	x	x
2752	Whitelist LOC		x	x	x	x	x	x	x	x
2753	Whitelist TRG		x	x	x	x	x	x	x	x
2754	Whitelist CALL		x	x	x	x	x	x	x	x
2760	1. Assistance SMS Type					x	x	x	x	x
2761	2. Assistance SMS Type					x	x	x	x	x
2762	3. Assistance SMS Type					x	x		x	
2763	4.Assistance SMS Type					x	x		x	
2765	1.Assistance SMS Text (Only with `Text Only´mode)					x	x	x	x	x
2766	2.Assistance SMS Text (Only with `Text Only´mode)					x	x	x	x	x
2767	3.Assistance SMS Text (Only with `Text Only´mode)					x	x		x	
2768	4.Assistance SMS Text (Only with `Text Only´mode)					x	x		x	
2770	ASS CALL1Type	TLP5x Since FW ver CT5P2.0….							x	x
2771	ASS CALL2Type	TLP5x Since FW ver CT5P2.0….							x	x
2772	ASS CALL3Type	TLP5x Since FW ver CT5P2.0….							x	x
2773	ASS CALL4Type	TLP5x Since FW ver CT5P2.0….							x	x
2800	Amber alert mode		x	x	x	x	x	x	x	x
2801	Amber alert number type		x	x	x	x	x	x	x	

CNF	Description	Note	TCP90EU	TUP90EU	TUP91EU	TUP92EU	RG310	TUP93EU	TLP50EU	TLP52EU
2802	Amber alert ACK requested					x	x	x	x	x
2803	Amber alert activation number		x	x	x	x	x	x	x	x
2804	Amber alert deactivation number		x	x	x	x	x	x		
2805	Amber alert prealarm time		x	x	x	x	x	x	x	x
2806	Amber alert automatic mode time					x	x	x		
2807	Amber alert time		x	x	x	x	x	x		
2808	Amber alert call number					×	×		×	×	×
2809	Keypad control	TLP5x Since fw ver.029							×	×
2810	1Internal MPTP Mode		x	x	x	x	x	x	x	x
2811	1Internal MPTP Phonenumber		x	x	x	x	x	x	x	x
2812	1Internal MPTP Command		x	x	x	x	x	x	x	x
2820	2Internal MPTP Mode		x	x	x	x	x	x	x	x
2821	2Internal MPTP Phonenumber		x	x	x	x	x	x	x	x
2822	3Internal MPTP Command		x	x	x	x	x	x	x	x
2830	3Internal MPTP Mode		x	x	x	x	x	x	x	x
2831	3Internal MPTP Phonenumber		x	x	x	x	x	x	x	x
2832	3Internal MPTP Command		x	x	x	x	x	x	x	x
2840	4Internal MPTP Mode		x	x	x	x	x	x	x	x
2841	4Internal MPTP Phonenumber		x	x	x	x	x	x	x	x
2842	4Internal MPTP Command		x	x	x	x	x	x	x	x
2845	Amber alert timer menu Start time								x	x
2846	Amber alert timer menu Time step								x	x
2847	Amber alert timer menu Number of items								x	x
2848	Call Type	TLP5x Since FW ver CT5P2.0….							x	x
2850	DIN enable	Not Twig Sure	x	x	x	x	x	x	x	x
2851	DIN wait ACK	Not TWIG Sure	x	x	x	x	x	x	x	x
2852	DIN PWR off	Not TWIG Sure	x	x	x	x		x	x	x
2860	SRD module sleep time		x	x	x	x		x	x	x
2861	Beacon search time		x	x	x	x		x	x	x
2862	Beacon battery warning sending		x	x	x	x		x	x	x
2863	SRD module power		x	x	x	x		x	x	x
2864	SRD TWIG Tag Enabled		x	x	x	x		x	x	x
2865	Show beacon name on display					x	x		x	x	x
2866	SRD Beacon sort&send					x	x		x	x	x
2867	BLE Beacon name filtering					x	x		x	x	x
2868	BLE beacon scan enable					x	x		x	x	x
2869	WiFi ap scan enable					x	x		x	x	x
2870	Beacon data preserve time					x	x		x	x	x
4000	Wi-Fi mode	TLP5x Since FW ver CT5P2.0….							x	x
4010	SSID for Wi-Fi Network 1	TLP5x Since FW ver CT5P2.0….							x	x
4011	Password for Wi-Fi Network 1	TLP5x Since FW ver CT5P2.0….							x	x

CNF	Description	Note	TCP90EU	TUP90EU	TUP91EU	TUP92EU	RG310	TUP93EU	TLP50EU	TLP52EU
4012	Authentication type for Wi-Fi Network 1	TLP5x Since FW ver CT5P2.0….							x	x
4020	SSID for Wi-Fi Network 2	TLP5x Since FW ver CT5P2.0….							x	x
4021	Password for Wi-Fi Network 2	TLP5x Since FW ver CT5P2.0….							x	x
4022	Authentication type for Wi-Fi Network 2	TLP5x Since FW ver CT5P2.0….							x	x
4030	SSID for Wi-Fi Network 3	TLP5x Since FW ver CT5P2.0….							x	x
4031	Password for Wi-Fi Network 3	TLP5x Since FW ver CT5P2.0….							x	x
4032	Authentication type for Wi-Fi Network 3	TLP5x Since FW ver CT5P2.0….							x	x
4040	SSID for Wi-Fi Network 4	TLP5x Since FW ver CT5P2.0….							x	x
4041	Password for Wi-Fi Network 4	TLP5x Since FW ver CT5P2.0….							x	x
4042	Authentication type for Wi-Fi Network 4	TLP5x Since FW ver CT5P2.0….							x	x
4050	SSID for Wi-Fi Network 5	TLP5x Since FW ver CT5P2.0….							x	x
4051	Password for Wi-Fi Network 5	TLP5x Since FW ver CT5P2.0….							x	x
4052	Authentication type for Wi-Fi Network 5	TLP5x Since FW ver CT5P2.0….							x	x
4100	VoIP Mode	TLP5x Since FW ver CT5P2.0….							x	x
4110	Server URL	TLP5x Since FW ver CT5P2.0….							x	x
4111	Server port	TLP5x Since FW ver CT5P2.0….							x	x
4112	Extension	TLP5x Since FW ver CT5P2.0….							x	x
4113	Password	TLP5x Since FW ver CT5P2.0….							x	x

6. TABLE OF SUPPORTED MPTP MESSAGES

Each type of device or its Firmware version may have only a subset of commands supported. It is advisable always to load latest FW to the device prior to programming. Below a list of versions supporting the commands below. The 4th digit of SW version may vary depending on the device model.

Supported TWIG device types and SW versions:
TWIG Protector TCP90EU CT1X.01.047.0000
TWIG Protector TUP90EU CT3X.01.036.0000
TWIG Embody TUP91EU CT4X.01.005.0000
TWIG Protector TUP92EU CT4P.01.18.0000
TWIG Bracer RG310
TWIG SOSCard TUP93 CT4B.01.033.0000
TWIG One TLP50/TLP51/TLP53 CT5P.01.011.0000
TWIG Neo TLP52/TLP54 CT5P.01.011.0000

Command		TCP90EU	TUP90EU	TUP91EU	TUP92EU	RG310	TUP93EU	TLP50/51EU	TLP52EU
ACK	ACK_PEM TUP90/91 only	x	x	x	x	x	x	x	x
AGP		x	x	x	x		x	x	x
ASS		x	x	x	x	x	x	x	x
CIN		x	x	x	x	x	x	x	x
CND		x	x	x	x	x	x	x	x
CNF		x	x	x	x	x	x	x	x
EMG		x	x	x	x	x	x	x	x
EMU	requires TWIG Point Netloc service			x	x		x	x	x
INF		x	x	x	x	x	x	x	x
LOB		x	x	x	x		x	x	x
LOC		x	x	x	x	x	x	x	x
LON	requires TWIG Point Netloc service			x	x		x	x	x
OSM	TCP90 not forced effects	x	x	x	x	x	x	x	x
LOU	requires TWIG Point Netloc service			x	x		x	x	x
PON				x	x		x	x	x
POS		x	x	x	x		x	x	x
PSR		x	x	x	x	x	x	x	x
RST		x	x	x	x	x	x	x	x
SIR		x	x	x	x	x	x	x	x
TRB			x	x	x		x	x	x
TRE				x	x		x	x	x
TRG		x	x	x	x	x	x	x	x
TRR		x	x	x	x	x	x	x	x

TRS		x	x	x	x	x	x	x	x
TRC		x	x	x	x		x	x	x
TRU				x	x		x	x	x