BENEFON
TRACKKEEPER NT 2.0

Operating Instructions

Publication number: YZ2643-1

LANGUAGE	DECLARATION OF CONFORMITY
Spanish	Mediante el presente documento, Benefon declara que este teléfono móvil, del tipo TGP79EB, satisface los requisitos esenciales y todas las demás disposiciones pertinentes de la Directiva 1999/5/EC.
Danish	Benefon Oyj erklærer herved, at denne mobiltelefon af typen TGP79EB er i overensstemmelse med de væsentlige krav og andre relevante betemmelser i Directive 1999/5/EC.
German	Hiermit erklärt Benefon Oyj, daß dieses Mobiltelefon vom Typ TGP79EB die wesentlichen Anforderungen und andere relevante Bestimmungen der Richtlinie 1999/5/EC erfüllt.
Greek	Με το παρόν, η Benefon Oyj δηλώνει ότι αυτό το κινητό τηλέφωνο, τύπου TGP79EB, συμμορφώνεται με τις ουσιώδεις απαιτήσεις και άλλους σχετικούς όρους της Οδηγίας 1999/5/EC.
English	Hereby, Benefon Oyj declares that this mobile phone, type TGP79EB, is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
French	Benefon Oyj déclare par les présentes que ce téléphone mobile, de type TGP79EB, est conforme aux exigences essentielles et aux dispositions correspondantes de la Directive européenne 1999/5/EC.
Italian	Benefon Oyj dichiara che questo modello di telefono cellulare, tipo TGP79EB, risponde alle principali specifiche e misure previste dalla Direttiva 1999/5/EC.
Dutch	Bij deze verklaart Benefon Oyj dat deze mobiele telefoon, type TGP79EB, voldoet aan de voornaamste eisen en andere relevante voorwaarden van Richtlijn 1999/5/EC.
Portuguese	A Benefon Oyj declara pela presente que este telemóvel, do tipo TGP79EB, está em conformidade com os requisitos essenciais e outras disposições relevantes da Directiva 1999/5/EC.
Finnish	Benefon Oyj vakuuttaa, että tämä matkapuhelin, tyyppiä TGP79EB, on direktiivin 1999/5/EC olennaisten vaatimusten ja muiden asianomaisten määräysten mukainen
Swedish	Härmed förklarar Benefon Oyj att denna mobiltelefon, typ TGP79EB, överenstämmer med de grundläggande kraven och andra relevanta bestämmelser i Direktiv 1999/5/EC.

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Web site: **www.benefon.com**

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CONTENTS

PART A: GENERAL

MECHANICS AND ENVIRONMENTAL EFFECTS

Sight

The device must have an unobstructed view to satellites at any time.

In marginal conditions, e.g. when staying in surroundings with heavy tree cover or in a shadow area in between base stations, an external GPS antenna, possibly even a GSM antenna, must be installed.

The device can be used like a standard GSM phone though for two-way voice connection an optional headset **(ZE5520)** must be used. In some cases, the device can be built in clothes or special vests.

If the device is mounted somehow, it must be attached to the surface so that the back of the device is facing up. To ensure proper functioning of the GPS, GPS antenna can be covered with plastic, fiber glass or clothes, but not with metal.

Temperature ranges

- **Usage**: -20 to +55 C° with a standard Li-Ion battery
- **Charging**: Standard Li-Ion battery must not be charged below 0°. Likewise, charging above +45 C° is prevented.

At temperatures below -25°C, or above +60 C°, the battery will not supply power and the device cannot be used.

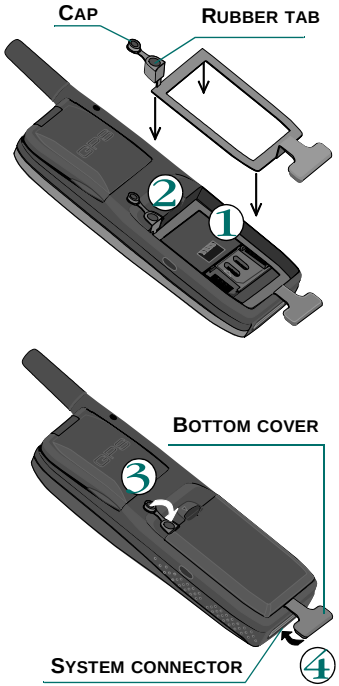
Upon warming up/cooling down, the device will function properly again.

Mechanical durability

The device is dust and splash proof. The protection category for the device is IPX4.

To meet these requirements, the rubber seal must be inserted in place correctly.

INSERTING THE BATTERY AND RUBBER SEAL



1. Place the rubber seal so that it lies at the bottom of the battery hole (1).
2. Fit the rubber tab into the recess in the upper left corner (2).
3. Lift the cap on the top of the rubber tab (3).
4. Fit the battery in place.
5. Push the battery into the device until it locks in place, and make sure the release catch has clicked into place.
6. The idea is that the battery will be securely fastened in the battery hole.
7. Stuff the bottom cover into the system connector so that the cover will be firmly secured around the connector (4).

REMOVING THE BATTERY: Push the release catch downwards and pull the battery carefully away from the device.

INSERTING THE SIM CARD

1. Slide the SIM card holder to the right. Lift the holder into an upright position.
2. Insert the card into the holder. Check that the cut corner is at the lower left side of the holder.
3. Close the holder by pushing it towards the device. Slide the holder back to the left until it locks.

PART B: CONFIGURING SETTINGS FOR THE TRACKKEEPER

There are two ways to configure settings for the TrackKeeper:

You can use the **MPTP commands**, and transfer settings *remotely*, over the air by sending a protocol message to the phone. The MPTP commands can be sent as a command string or through a specific software, such as the Benefon In Charge.

- You can use AT commands for configuring settings and transfer them to the phone *locally*, via the BW data/NMEA cable. This can be easily done by using the **Benefon Configurator software**.

MPTP MESSAGES AND REMOTE CONFIGURATION (OTA)

MPTP configuration commands are used when a remote update of device configuration is needed. Update can include all telematics settings and phone numbers, such as emergency numbers, authorized numbers, GPS operating mode.

For the remote configuration, the settings must be coded as as MPTP messages.

For more information on MPTP messages, see the document on MPTP commands, located at the Web site: **www.benefon.com**.

THE BENEFON CONFIGURATOR SOFTWARE FOR TRACKKEEPER

The Benefon Configurator software is intended for editing settings locally for the device. Since the Benefon Configurator is very easy to use, it is advisable to make initial and other major configurations for the device with this software.

When you are finished with editing, you can either transfer the settings back to the device via the cable immediately, or save them in a computer disk (as any normal file) for further use.

The settings done within the software can be transferred to the device via the Data cable or NMEA 0183 cable (in the latter case, use the Data adapter for the connection).

Another, slightly quicker way to transfer configurations made by Benefon Configurator is to use the SetupLoad software. For more information on it, please contact your dealer.

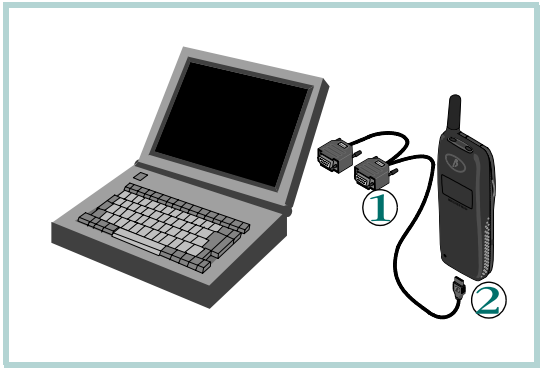
The application window is split in two sections:

- The Benetree structure is located on the left. It consists of two main nodes: **My benefon** (on-line) and **My computer** (off-line). By clicking the main nodes, you can access their sub-nodes. By clicking the sub-node, you can access the corresponding Benefon Configurator document files.
- The Document window is located on the right. The setting groups are divided up into interleaves containing separate data fields.

Connecting the TrackKeeper to the Benefon Configurator

1. Plug the square-end of the **Data cable** into a serial port of your computer. The NMEA 0183 cable contains two square-end adapters. In case you use the NMEA 0183 cable, plug the **data adapter** (1) into a serial port. Serial ports are located at the back panel of your computer.

   Next plug the **small end** (2) of the cable into the system connector on the bottom of the device.



2. Open the **Benefon Configurator**.
3. Choose the correct serial port from the toolbar: Click the pop-up menu and highlight the desired port.

Or, choose **Benefon Configurator...** from the **Edit** menu. Select the **Default communication port** by clicking the check box. Click **OK** to exit the menu.

THE MAIN IDEA IS THAT THE PORT SELECTED IN SOFTWARE MATCHES WITH THE PORT THE DATA ADAPTER IS PLUGGED IN.

4. Double-click the main node **My Benefon**. **Or**, double-click the **TrackKeeper** icon. **Or**, choose **Connect** from the **Mobile** menu. **Or**, click the button **Connect** located on the toolbar.

5. The software establishes a connection to the device and renames **My Benefon** node according to the type of the device, in this case **TrackKeeper**.
6. At the same time the software reads data from the device and loads it in the display. The data contains currently existing settings and menus from the device. In Benetree

these settings and menus are shown as sub-nodes, such as **User settings**, and **Telematics settings** under the main node **My Benefon**.

7. If the software requests security code while loading the settings, you must key in the code and press **Ok**. For more information on security code, see SECURITY CODE ON PAGE 42.
8. Click the name label **TrackKeeper**. The sub-nodes will be displayed as icons in the Document window on the right.
9. You can choose the desired sub-node/icon by clicking it. The data fields will be displayed.

Loading settings from the TrackKeeper to the software

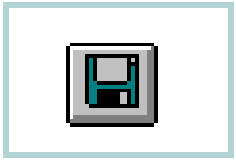
As you connect the device to the software, all current settings in the device are copied to the software.

To load only part of the settings to the software, choose **Benefon Configurator...** from the **Edit** menu. Check the desired setting groups, which are located in the **Mobile phone start up tasks**. Click **Ok** while the dialog box is displayed.

Unloaded settings can be loaded later on in the same session by choosing **Open NNsettings** from the **Mobile** menu.

Saving settings in a computer disk

1. If the device is not currently connected to the software, you can still make configurations, save them and transfer them to the device afterwards. When working this way, data fields are available for editing via **My computer** node.
2. To save data in a computer disk, choose **Save as...** from the **File** menu. You can also click the function icon on the toolbar.



3. Select the destination drive and folder, and rename the file the way you like. Click **Save**. The software stores all data fields that the chosen node (e.g. **User settings**) contains.

TIP:
IT IS ADVISABLE TO ALWAYS SAVE THE SETTINGS IN THE COMPUTER DISK. THIS WAY, THE READY-MADE SETTINGS CAN BE EASILY RECALLED AND CHECKED AT ANY TIME NEEDED, EVEN WHEN THE DEVICE IS FAR AWAY.

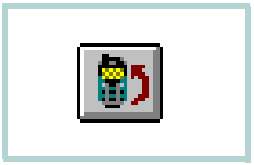
WHEN THE SETTINGS ARE STORED IN THE COMPUTER AS A NORMAL FILE, COPYING THEM TO OTHER SIMILAR DEVICES, OR MAKING CHANGES TO THEM SHOULD BE QUITE EASY.

Transferring settings from the software to the Trackkeeper

While the Benefon Configurator is connected to the device, you can save data in the device.

1. First open the Benefon Configurator document which content you want to save in the device.
   Settings which are previously stored in a computer disk can be recalled by choosing **Open** from the **File** menu, or pressing the corresponding function icon on the toolbar.

2. Choose **Save To Mobile** from the **File** menu.
   Or, click the function icon on the toolbar.



   When transferring data to the device, the previous data is replaced with the new data.

Changing default mobile phone

When any Benefon phone or device is connected to the Benefon Configurator, the software identifies it automatically, and offers you correct data fields for editing.

To make off-line configuration for some other Benefon phone (e.g. Esc!) when the phone is currently unavailable, you need to change the default mobile phone in Benefon Configurator.

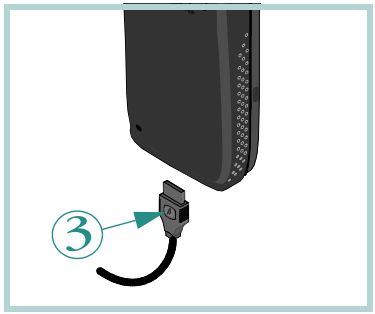
1. Change the default Benefon mobile phone by selecting **Benefon Configurator...** from the **Edit** menu, or highlighting the desired device or phone model from the pop-up menu, located on the toolbar.
2. Now the data fields of this "new" phone model are available and can be opened from **My computer** node on the left.
3. Click the desired node, e.g. **User settings**, press the mouse´s right button and select **New >Ok**.
4. Similarily, you can close the file which is not needed any more by clicking it, pressing the mouse´s right button and selecting **Close**.

Disconnecting the TrackKeeper from the software

1. Choose **Disconnect** from the **Mobile** menu.
   Or, click the button **Disconnect** on the toolbar.

2. To unplug the device from the cable, press the release button (3) on the top of the small end of the cable.

   Gently pull the cable from the system connector of the device.



ACTIVATING NEW FEATURES

Some of the new features are sold separately, they are not included in the basic software NT 2.0 package. Such features are, e.g. Waypoint tracking, CSD trace download, Encryption, Vertical sensor and Update of an old software into the new NT 2.0 software.

When you purchase these new features, a **Service activation key** is provided to you by the dealer or the manufacturer. The key is needed for activating the features. Activation can be easily done with the Benefon Configurator.

1. First make sure, the device has cable connection to the Benefon Configurator.
2. Click **Connect.**
3. Select **Save activation key** from the **Mobile** menu.
4. Key in the **Service activation key**. (Note that when updating the software, the device may inform you of the incorrect software version. You have then 2 minutes to key in the activation key until the device will power off itself.)
5. Click **Save**.
6. Click **Disconnect.**

SIM FEATURES: SHORT MESSAGES

In order to read, write, send and receive normal short messages via the device, the device must be connected to an external device.

The external device attached to the device can be e.g. a computer, a laptop or a palm computer. Since the device lacks the keyboard and screen, the external device must be provided with these. The physical connection is established with the data cable.

A suitable software, for example the Benefon Configurator, is needed for the communication as well.

Reading and editing existing messages

You can read and edit messages you have written and saved as **.sms** files in the computer.

To open messages stored in the computer, select **Open** from the **File** menu. Make sure the **Files of type** shows **Short messages** (or **All Benefon Configurator Files**). Find the desired file by browsing and click **Open**.

Messages are listed and can be read.

Editing: Double-click the message you want to edit. Edit text and other details and click **Ok** when ready.

Writing and sending a short message

1. Open the Benefon Configurator.
2. Double-click the icons **SIM**, **Short messages** and **Own messages**.
3. Choose **Sms**, **New message** from the **Edit** menu.
4. Key in the message text and the recipient´s number. By clicking the square beside the topic, the number can be fetched from the **Phone book**, assuming the number is found.
5. Make sure, the **Sms service number** is correct. It can be changed by clicking the square beside. By selecting the option **SIM card default,** the SMS service number will be picked up from the SIM card. If the SIM card does not contain the SMS number, select the option **Own** and key in the SMS number.
6. Select the desired **Saving/Sending action** by checking the box.
7. Complete by pressing **Ok**.

NOTE: When the device is disconnected, you can still write short messages and save them for further use, but sending the message is possible only while the device is connected to the software. To work in off-line, you need to select **Short messages** from **My computer** node.

SIM FEATURES: PHONE BOOK

As you open the **Phone book**, the memory entries stored in the SIM card are listed and can be processed. Index number stands for memory slot number.

Editing and adding an entry

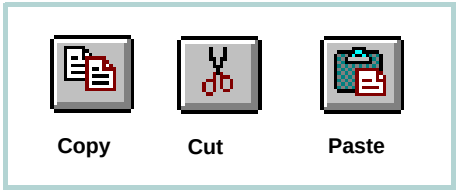
1. To edit details of an entry, click the desired entry. To add a new phone book entry, click a blank line (1).
2. Key in name and number (2).
3. By pressing **Tab** on the keyboard you can move from a data field to another.

Deleting entries

1. To delete a phone book entry, click the desired entry.
2. Press **Delete** on the keyboard. You can also choose the command **Delete** from the **Edit** menu, or by clicking the mouse´s right button.

Moving and copying entries

1. To move or copy a phone book entry to another slot, click the desired entry.
2. Press **Ctrl+C** (for copy) or **Ctrl+X** (for cut) on the keyboard. Click the destination line and press **Ctrl+V** (for paste) on the keyboard.
   You can also choose the commands **Copy**, **Cut** and **Paste** from the **Edit** menu, or by clicking the mouse´s right button.
   Or, you can click the corresponding function icons on the toolbar.



3. If the destination line is reserved, you also need to confirm, whether to overwrite the old information or not.
   - To overwrite the old information, click **Yes** while the **Dialog box** is displayed.
   - To preserve the old information and transfer the new information to another free slot (Index number), click **No** while the **Dialog box** is displayed.

Arranging entries

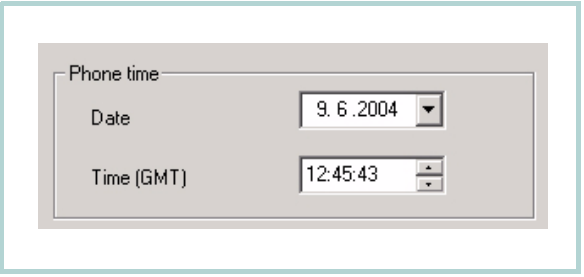
Arrange the phone book by **Index**, **Name**, or **Number** either by

- clicking the title
- choosing the option from the **Edit** menu
- clicking the mouse´s right button.

- **Sort by**: Rearranges the phone book permanently. When transferring the phone book data back to the device, the data will be arranged by the new order.
- **View by**: Rearranges the phone book temporarily. When transferring the phone book data back to the device, the data will be arranged by the old order.

USER SETTINGS

Phone time and date



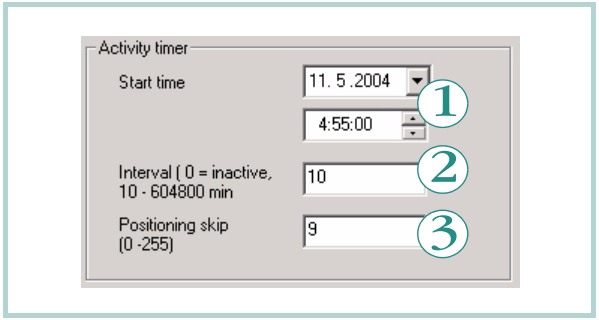
Time and date can be set in the Benefon Configurator.

Key in the time and date in the GMT format (“Greenwich Time”). Date and time can be selected by clicking the arrows, as well.

Time stamps associating MPTP messages are displayed in the GMT format, as well.

The device will also adjust its date and time in first position fix from GPS.

Activity timer



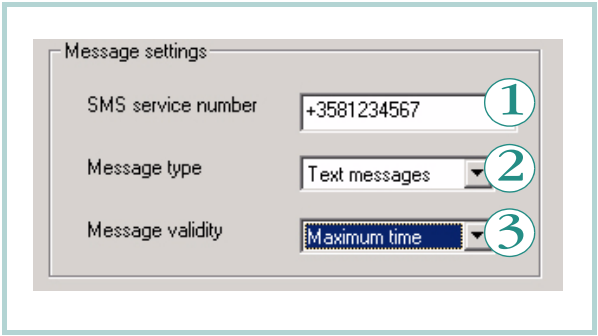
The device can be configured to update its position, e.g. once a day and report it to the service center.

Activity timer can also be used to wake up the device periodically to check if there are any incoming messages. If there are no messages, it will return to sleep for the next wake-up.

The timer consists of three data fields:

1. **Start time.** Click the arrows or key in the date and time, when the timer is switched on for the first time.
2. **Interval**. Key in the interval for wake-up.
3. **Positioning skip**. It may not be necessary to determine the current position each time when the timer is turned on. By setting a value N for the position skip, the device can be programmed to only determine the position every Nth time the timer is turned on.

Message settings



SMS SERVICE NUMBER

You can store the **SMS service number** (1), which is needed for sending normal short messages and telematics protocol messages.

Most SIM cards have the SMS number already stored. Thus setting the number in most cases is not necessary.

However, when the number is separately stored in the device´s own memory, it will speeden up initiation of the device, especially SMS processes.

The number must be set correctly, otherwise sending short messages is not possible. The SMS service number can be found e.g. in the manual of your local network operator.

However, if you are supplied with a separate SMS service number for telematics protocol messages, you may store the number in the **Protocol settings** data field, found in the **Telematic settings**.

Configuring separate SMS service number for protocol messages is recommended in case the **Activity timer** is used.

MESSAGE TYPE

You can determine what kind of a message you are processing. You can choose the message type from these: **Text**, **Fax**, **X400**, **Email**, **Ermes**, or **Data**.

When using the device for normal or MPTP messaging, click the arrow and highlight **Text** for message type (2).

MESSAGE VALIDITY

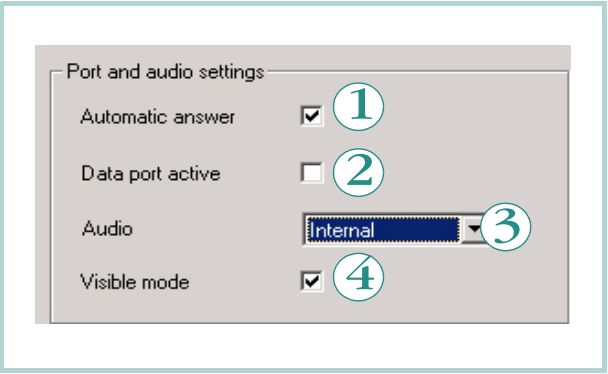
You can select the length of validity for *normal SMS messages*, i.e. for how long the SMS messages are stored in the server of the operator.

You can choose the message validity from these: **1 hour**, **6 hours**, **24 hours**, **1 week** or **Maximum time**.

Click the arrow and highlight the desired option (3).

The length of validity for *telematics protocol messages* is selected in **General telematic settings.** For more information, see MESSAGE VALIDITY ON PAGE 30.

Port and audio settings



AUTOMATIC ANSWER

The automatic answer function can be turned on or off.

- If the **Automatic answer** is turned on (1), a voice call to the device from any number is possible.
- If the **Automatic answer** is turned off (the check box is left blank), making a voice call to the device can only be done from a number listed as an allowed caller. Allowed callers are stored in the **General telematics settings**. For more information, see LIST OF ALLOWED CALLERS ON PAGE 29.

The device contains a built-in microphone. By making a call to the device, the caller (e.g. service center) can listen in the device and its surroundings. After certain number of rings, the device answers an incoming call automatically by opening audio connection.

To have audio both ways, the automatic answer must be turned on and the device must either

- contain a built-in speaker, or
- be connected to the Headset.

DATA PORT ACTIVITY

This setting defines, whether the data port is turned on or off (2).

Data port setting must be turned on in case the device is needed for data transfer and connected to some external device.

If the port is not needed, it is recommended to turn the data port off for decreasing the power consumption.

- To turn the data port on, check the box.
- To turn the data port off, leave the box blank.

AUDIO

- **Internal**: The device contains an internal microphone and uses it.
- **External**: Audio comes from some external device, e.g. Headset, via the configuration port.

Click the arrow and highlight the desired option (3).

VISIBLE MODE

The device can be set to operate

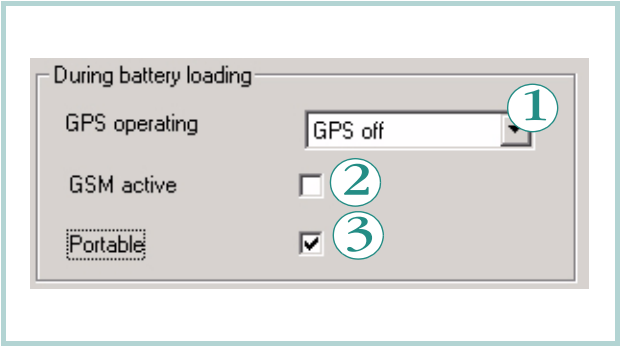
- In visible mode (the box is checked) or
- In invisible mode (the box is left blank).

In **Visible mode** the LEDs are lit as described in this manual (see INDICATOR LEDS ON PAGE 43).

Invisible mode is for making the device more difficult to detect. In invisible mode only some of basic LED patterns are lit, e.g. when entering incorrect pin or powering up/down. This way e.g. sending emergency messages can be done very discreetly.

This configuration can be done both ways: locally in the Benefon Configurator, and remotely via MPTP messaging.

Settings during battery loading



GPS OPERATING MODE

You can select, which one of the GPS power modes is on while the device is being charged (1).

Set the GPS **Off** in case

- the time reserved for charging is quite short
- GPS functions are not needed during charging process.

By selecting **No change,** the GPS mode remains in the previously configured mode.

GSM ACTIVATION

You can select, whether the GSM is turned on or off while the device is being charged.

In case the GSM functions are needed even during the charging, this setting (2) must be turned on (box checked).

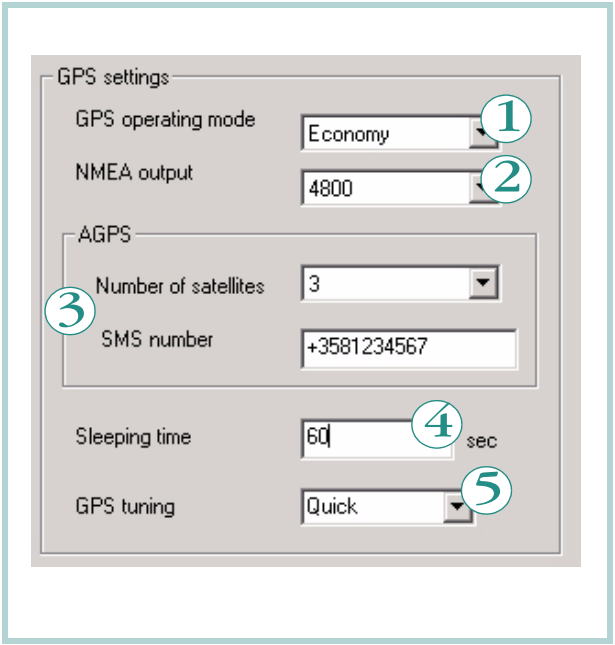
PORTABLE

This setting defines efficiency of charging.

When using the TrackKeeper mainly as portable device, check the box (3). This way battery will be charged completely and kept full of charge while the device is connected to a charger.

If the device is most of the time connected to a charger, the check box should be left blank in order to maximise the life of the battery.

GPS settings



SETTING GPS OPERATING MODE

The GPS receiver in the device uses power saving options for ensuring maximum battery capacity. Click the arrow and highlight the desired option (1). The GPS receiver has three modes:

- **Full power** without the power saving option.
- **Off**
- **Economy**

Operating mode depends on the way, the device is used. Autonomous system, i.e. a portable device, normally uses **Economy** mode, while device with constant power supply, i.e. a fixed device, uses **Full Power** mode.

NMEA OUTPUT

The NMEA port output can be turned on or off (2). This device supports a subset of NMEA 0183 v2.0 output protocol, which is used for transferring position data between the device and a navigation system, such as a Search and Rescue application. For the connection you also need a separate NMEA cable, which is sold as an accessory.

- By selecting **Off**, you will turn the NMEA output port off.
- By selecting a transferring speed you will turn the NMEA output on.

When the **NMEA output** is turned on, the device will consume slightly more power.

ASSISTED GPS (AGPS)

The device has capability to receive assistance to the GPS receiver in order to speed up the initial position calculation. This is very useful feature if the device is in poor satellite coverage.

Assistance can be supplied over the Mobile Phone Telematics Protocol in a binary coded protocol message. The message will contain ephemeric and almanac data which is based on a rough position calculated by e.g. GSM network parameters (Cell-ID, CI-TA etc). The assisted GPS is supplied from a third party station server.

Using the AGPS does not affect the accuracy of the position. If the last position fix is deemed to be too old, and the AGPS is set, the AGPS feature is automatically used to speed up the position determination.

The cost of the AGPS service is determined on the contract of the service provider.

You can specify settings for ordering assisted GPS information from a service provider (3).

- **Number of satellites:** Select the number of satellites. However, please note that the more satellites selected, the faster the service but the higher the charge.
- **SMS number**: Key in the SMS number of the AGPS service.

SLEEPING TIME (IN ECONOMY MODE)

As a default setting, the GPS economy mode calculates position approximately every 45 seconds. The position interval consists of two things:

- An ideal *sleeping time* for the GPS plus
- An actual *time* needed *for searching satellites and calculating position* by the GPS.

The sleeping time is adjustable (4). In the Benefon Configurator, key in the sleeping time in seconds. The sleeping time should be rounded to tens, otherwise the software does the rounding.

E.g. by entering 27, the ideal sleeping time will be rounded to 30 seconds. Note that 20 seconds is the minimum value.

NOTE: The time needed for searching and calculating satellites depends on present circumstances, e.g. satellite coverage, age of the latest position fix, distance from the previous to the current position and so on.

GPS TUNING

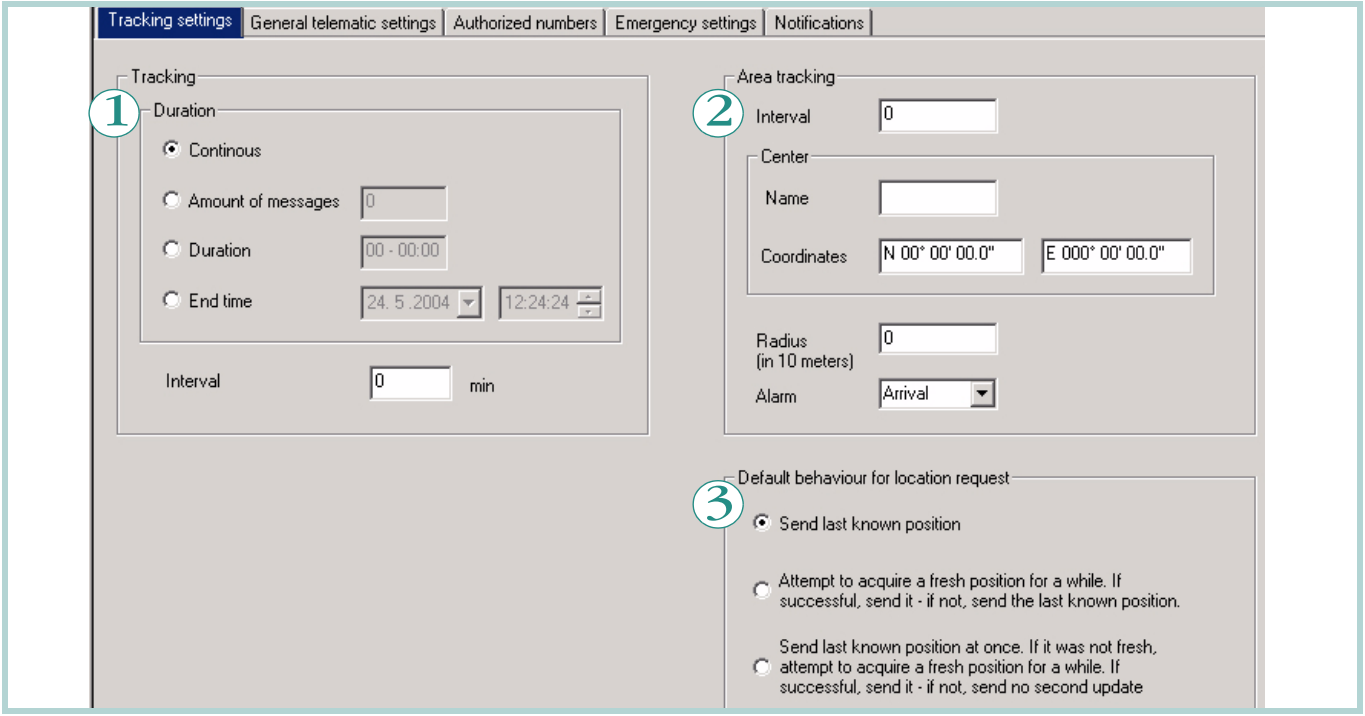
You can set tuning values for the GPS receiver. Depending on selected value, the GPS prioritizes precision over quickness or vice versa.

Set the value by clicking the arrow and highlighting the desired option (5).

- **Quick**: The GPS is tuned for quick position fix. The receiver can acquire position fix quite fast in moderate or good conditions. Position can be acquired even in a bad satellite coverage, but the accuracy might not be so good.
- **Precise**: The GPS is tuned for high accuracy. However, acquiring position fix might take time and can be problematic in a bad satellite coverage.

TELEMATIC SETTINGS

Tracking settings



TRACKING

Tracking (1) is remotely controlled by the service center. When the tracking function is turned on, the position information is sent to the service center several times in sequence.

Essential phone numbers, such as **Service center number** and **SMS service number** must be configured in the device. In the Benefon Configurator, these numbers can be set in the **General telematic settings**.

If the device is temporarily switched off, battery is removed, or the power supply is some other way disconnected, the tracking record (e.g. amount of messages) will be reset and start from the beginning.

Duration

You can select, for how long or on what terms tracking will be on. After that, the tracking will be turned off automatically. Only one of these options can be turned on at once.

- **Continuous**: The tracking will be turned on until further notice. !Deactivation message must be sent separately.
- **Amount of sent messages**: Tracking will be on until defined amount of messages has been sent to the service center. Key in the amount and confirm your choice.
- **Duration**: Tracking will be on for a period of time. Key in how many days, hours and minutes, the tracking should be on.
- **End time**: Tracking will be on until the end time is reached. Key in the date and time, the tracking should be turned off. Date and time can be selected by clicking the arrows, as well.

Interval

The given interval, e.g. 60 minutes, indicates that the device will send its position to the service center at intervals of 60 minutes.

Key in the tracking interval in minutes.

Activation

Make sure all the required settings for tracking are completed before activating the function. Such settings are, e.g. duration and interval. New settings can be applied only while the tracking is deactivated.

In this device model tracking is always activated or deactivated by sending an MPTP message to the device from the service center.

AREA TRACKING

Area tracking (2) is remotely controlled by the service center (or some other authorized number). When the area tracking is turned on, the position information will be sent to the service center only when the device is moving in or out of the pre-defined area.

Essential phone numbers, such as **Service center number** and **SMS service number** must be configured in the device. In the Benefon Configurator, these numbers can be set in the **General telematic settings**.

The area can be determined by keying in a center point and a radius of an area. The area tracking does not contain the duration option, i.e. the area tracking will never be turned off automatically.

Interval

The given interval, e.g. 60 minutes, indicates that the device will send its position to the service center at intervals of 60 minutes, but only in case the device is located outside of the determined area.

Key in the interval for area tracking in minutes.

Center point

Key in the center point name (e.g. Home) and enter coordinates.

Radius

Key in the desired radius in 10 meters. E.g. by entering 20, your actual radius will be 200 meters.

Alarm mode

You can set an alarm to alert when crossing the borderline of an area. The alarm can be set to alert either when arriving in or departing from the particular area.

Click the arrow and highlight the desired option.

Activation

Make sure that all the required settings for area tracking are completed before activating the function. Such settings are, e.g. interval, center point, radius and alarm mode (at arrival or departure). New settings can be applied only while the area tracking is deactivated.

In this device model area tracking is always activated or deactivated by sending an MPTP message to the device from the service center.

DEFAULT BEHAVIOUR FOR LOCATION REQUEST

The device may receive several different messages requesting location. Such messages can be, e.g. Location request messages (?LOC), or Location history request messages (?HIS). (For more information on how to create location request messages, see the separate MPTP document.)

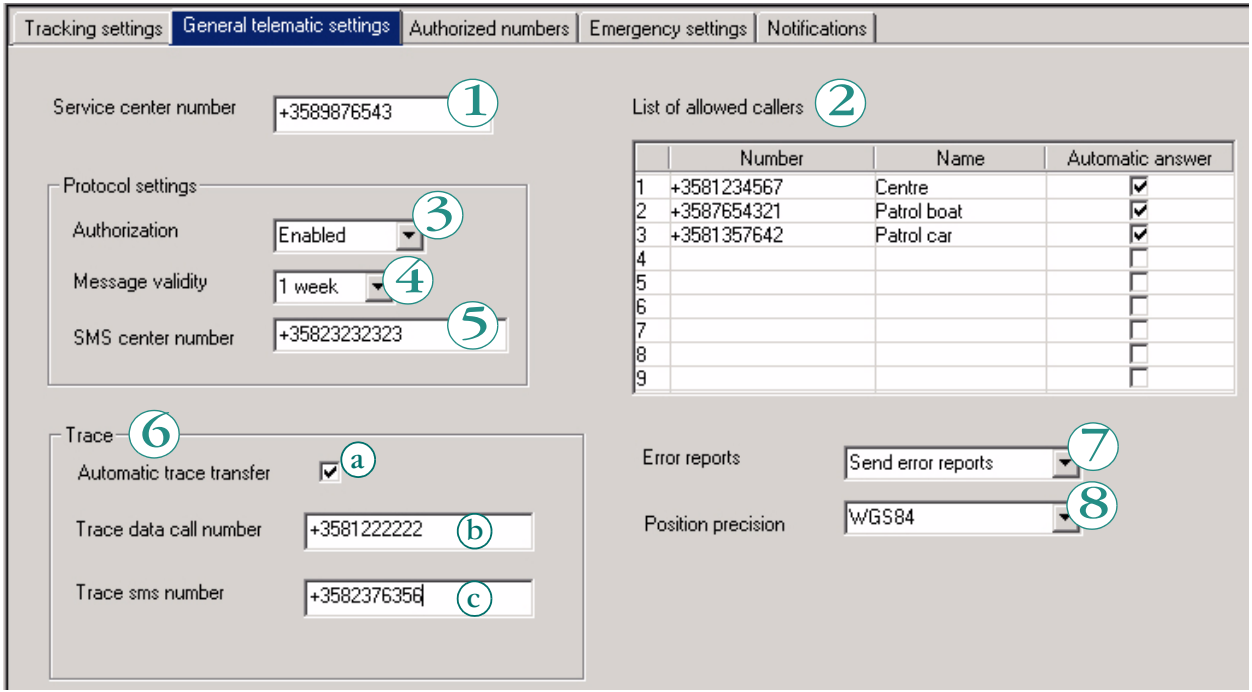
You can define, which way the device responds the location requests (3).

The message always includes a time stamp indicating age of the position.

Choose from the options below by checking the corresponding box in the Benefon Configurator.

- **Send last known position**: When the device receives the location request, the device immediately recalls the latest position found in the memory and sends it to the requesting number. The position can be quite old. If the device does not have a position at all, the message will be sent without position.
- **Attempt to acquire a fresh position for a while**: When the device receives the location request, the device immediately switches the GPS on (if it is currently off), updates position, sends it and switches the GPS off. Then the device returns to normal idle mode. Only in case the position update is NOT possible within 3 - 4 minutes, the device will send the latest position found in the memory to the requesting number.
- **Send last known position at once**: When the device receives the location request, the device immediately recalls the latest position found in the memory and sends it to the requesting number. In addition to that, the device tries to update the position for 3 - 4 minutes. If the position update succeeds, the new position is sent to the requesting number, as well.

General telematic settings



SERVICE CENTER NUMBER

You can change and store the phone number, which is used for sending telematics protocol messages to the service center.

Key in the number of the service center (1).

LIST OF ALLOWED CALLERS

You can view, edit and store several numbers for allowed callers (2). You can also attach the automatic answer function to the desired numbers.

Allowed callers are the ones, who are permitted to call to the device at any time: Calls from these specific numbers are always put through.

In fact, if the **Automatic answer** check box in the **User settings** is left blank, allowed callers are the only ones whose calls are put through. For more information, see AUTOMATIC ANSWER ON PAGE 18.

PROTOCOL SETTINGS

Authorization

The device is allowed to respond to protocol messages sent from the *authorized* numbers automatically at any time. Always authorized numbers are:

- The numbers stored as **Authorized numbers**
- The numbers stored as **Emergency center** numbers
- The number stored as the **Service center** number.

Authorization on - the setting is **Enabled** (3)

- If authorization is turned on, all requests coming from authorized numbers are automatically processed. Any responses are sent to the number from which the request came.
- All requests coming from unauthorized numbers are discarded.

Authorization off - the setting is **Disabled**

- If authorization is turned off, all requests are automatically processed.
- If the service center number is defined, any responses are always sent to that number.
- If the service center number is NOT defined, responses are sent to the number from which the request came (assuming the number is known).

Message validity

You can select the length of validity for *telematics protocol messages*, i.e. for how long the SMS messages are stored in the server of the operator. (The length of validity for normal SMS messages is selected elsewhere, in the **User settings**).

This setting can be used to avoid massive helping efforts in case an emergency message has been sent a week ago and there is reason to believe that help is no longer needed.

Click the arrow and highlight the desired option (4).

You can choose the message validity from these: **1 hour**, **6 hours**, **24 hours**, **1 week** or **Maximum time**.

SMS center number

You can set the SMS center number for the telematics protocol messages. If the number is not set, the normal short message center number is used instead.

Key in the SMS center number (5).

TRACE LOG SETTINGS

The device stores position data in its memory automatically. Stored data contains position information and time stamp.

The maximum storage capacity is 1000 positions. Once the log is full, the device stacks the information by dropping off irrelevant positions. When positions cannot be dropped any more without losing important information, there are two ways to proceed:

- Log overwrite: In case the log is not transferred at all, the device will automatically replace the oldest positions with the new ones.
- Log transfer: There are several ways to transfer the log from the device:
  - Locally, by using the Benefon Configurator and data cable, or
  - Remotely, "over the air" by sending a specific MPTP message separately to the device, or
  - By using **Automatic trace transfer.** In this case the setting is done in advance, via the Benefon Configurator, but the actual transfer will happen automatically and remotely, via data call.

Automatic trace transfer

By checking the box (6a), the trace log will be sent automatically once the log is stacked full. The destination number to which the log will be sent is the trace data call number (see below).

By leaving the check box blank, trace log is automatically overwritten once it is full. In this case the log can be recalled e.g. by sending a specific MPTP message to the device.

Trace data call number

Key in the trace data call number (6b). This number is needed for transferring log remotely from the device. The receiving unit must include a phone, modem and computer.

When the receiving phone is a normal phone, you can store its normal phone number for the trace data call number.

NOTE: If the receiving phone is a mobile phone, it must contain a specific SIM card, which is equipped with data feature. Data feature usually includes a separate data call phone number (i.e. CSD number) for data reception. In order to get this feature, please contact your network operator.

Trace SMS number

Key in the SMS number (6c). The number is needed for informing the receiving party in case the data transfer fails after three attempts.

Also make sure, the **Error reports** is set to **Send error reports** (see below).

ERROR REPORTS

You can set the device to inform of errors occurred in MPTP messaging (7). An error can be, e.g.

- Failure in message transmission: E.g. the device is unable to transfer trace log
- Misspelling: The device detects that a command string is uncorrect
- Errors in logic (illegal actions): You try to turn a function on when, in fact, the function is already turned on.

Depending on current authorization setting, the device will send error reports to the **Service center number**, some other authorized number or requesting number. For more information, see AUTHORIZATION ON PAGE 29 and SERVICE CENTER NUMBER ON PAGE 29.

NOTE: If sending of **Trace log** fails, the device will inform of failure only under these circumstances:

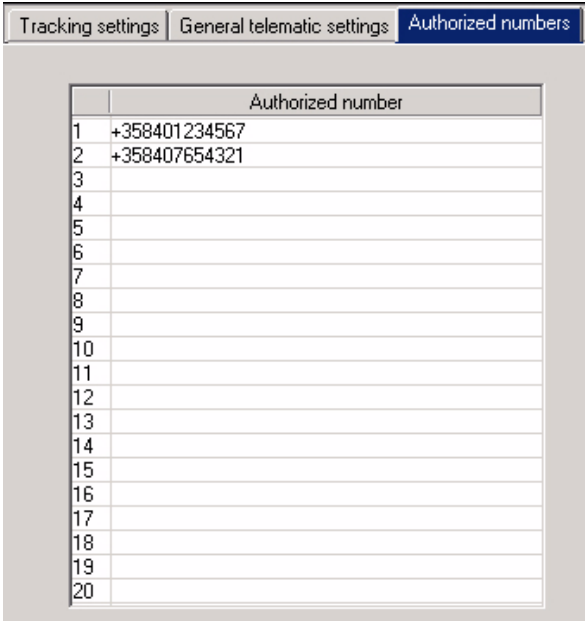
- **Error reports** data field shows **Send error reports** and
- **Trace SMS number** is stored. (see above).

POSITION PRECISION

You can set the device to show precision of the coordinate calculation in protocol messages. Precision of coordinates will be shown in meters until precision exceeds 254 meters. This setting has an effect on almost all protocol messages, which contain position information, excluding emergency messages.

Click the arrow and highlight the desired option (8).

Authorized numbers



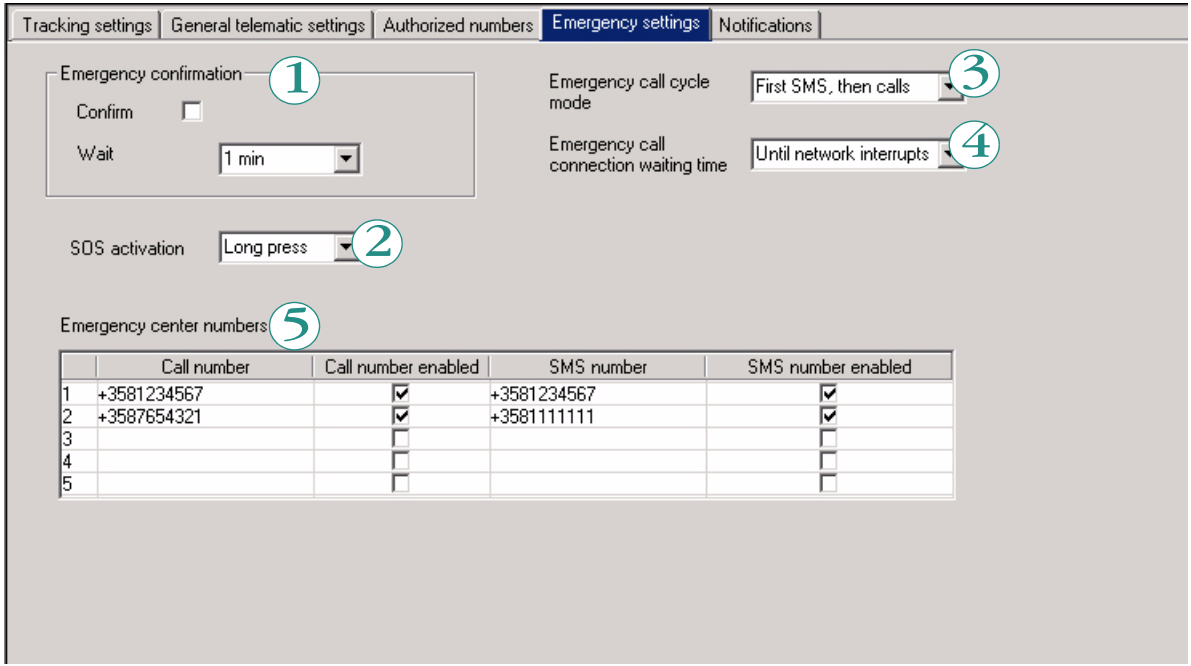
The device is allowed to respond to protocol messages coming from *authorized* numbers automatically, at any time. Always authorized numbers are:

- The numbers stored as **Emergency center numbers**.
- The number stored as the **Service center number**.
- The numbers stored as **Authorized numbers.**

To authorize individual phone numbers, key in the numbers in the Authorized numbers data field.

For turning the authorization on or off, see **AUTHORIZATION ON PAGE 29**.

Emergency settings



SETTING CONFIRMATION FOR EMERGENCY MESSAGE DELIVERY

By checking the **Confirm** box, you can request *a confirmation* just to make sure that someone has received an emergency message. The device will resend emergency messages until it receives a confirmation of the successful delivery.

You can also specify *the waiting time*, i.e. how long a time the phone waits for the confirmation before trying to reach some other emergency center number.

NOTE: The emergency confirmation feature (1) is not supported by all control systems. Using this feature in a system, which does not support it can cause massive resending of messages and high charges.

SOS ACTIVATION

The emergency button on the top of the device is used for manually initiated SOS calls/messages.

The emergency cycle can be initiated either by

- pressing the emergency button quickly twice, or
- pressing and holding down the emergency button for a few seconds.

Click the arrow (2) and highlight the desired option.

SELECTING EMERGENCY CALL CYCLE MODE

You can define order for making emergency (voice) calls and sending emergency messages while the emergency cycle is on.

Click the arrow (3) and highlight the desired option:

- **First SMS, then calls**: When the emergency cycle is initiated, first the device will send the emergency messages, after which the voice calls will be made starting from the top of the list of the emergency numbers.
- **Alternately**: The device will make a voice call and send an SMS in pairs according to the list order, starting from the top.

SETTING EMERGENCY CALL CONNECTION WAITING TIME

You can define for how long a time the device tries to call a single emergency number before moving on to the next number in the list of emergency numbers.

Click the arrow (4) and highlight the desired option.

EMERGENCY CENTER NUMBERS

The emergency (SOS) messages are sent and emergency calls are made to the numbers stored in the emergency center list (5).

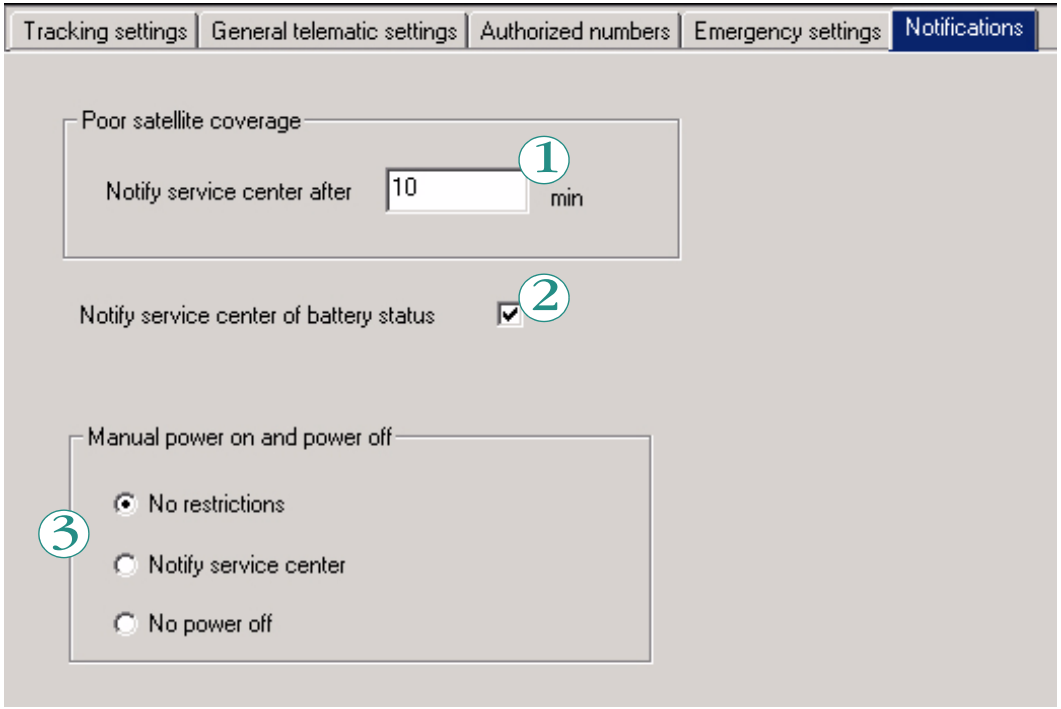
The numbers are in priority order, starting from the top of the list. These numbers work as "a chain":

You can have two numbers (a phone number and an SMS) associated with each emergency center number.

Check the box to make sure, the corresponding number is used during an emergency cycle.

For more information on how the emergency cycle works, see the EMERGENCY CYCLE ON PAGE 49.

Notifications



POOR SATELLITE COVERAGE

Notify service center when satellite coverage drops (1):
The device can be configured to notify the service center if the satellites are suddenly dropped and position is lost, e.g. when entering in a building.

Key in the number in minutes.

The timeout indicates, for how long the device is allowed to stay in poor satellite coverage before sending a protocol message to the service center - the smaller the number you set in here, the faster the device will react to lost satellites and the sooner the notification will be sent.

NOTIFY SERVICE CENTER OF BATTERY STATUS

By checking the box (2), the service center will be notified of some events occurred in battery status.

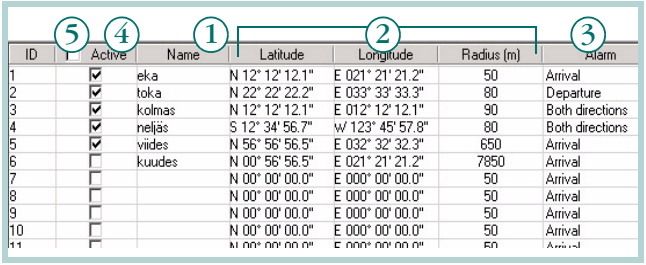
Notifying means sending a protocol message to the service center, for example in these cases: Low battery, temperature too warm/too cold for charging or using battery, battery failure.

SETTINGS FOR MANUAL POWER ON AND OFF

You can set some restrictions for switching the power of the device on or off manually(3). You have three alternatives to choose from:

- **No restrictions**: The phone can be turned on and off as usual. The service center will NOT be notified of the power on/off.
- **Notify service center**: The service center will always be notified when the phone is powered on or off. Notifying means sending a protocol message to the service center.
- **No power-off** : The phone cannot be powered off normally (by pressing ⏻). Moreover, if the phone powers off for some reason (e.g. Low battery), the phone will send a protocol message to the service center.

WAYPOINT TRACKING



ID	Active	Name	Latitude	Longitude	Radius (m)	Alarm
1	☑	eka	N 12° 12' 12.1"	E 021° 21' 21.2"	50	Arrival
2	☑	toka	N 22° 22' 22.2"	E 033° 33' 33.3"	80	Departure
3	☑	kolmas	N 12° 12' 12.1"	E 012° 12' 12.1"	90	Both directions
4	☑	neljäs	S 12° 34' 56.7"	W 123° 45' 57.8"	80	Both directions
5	☑	viides	N 56° 56' 56.5"	E 032° 32' 32.3"	650	Arrival
6	☐	kuudes	N 00° 56' 56.5"	E 021° 21' 21.2"	7850	Arrival
7	☐		N 00° 00' 00.0"	E 000° 00' 00.0"	50	Arrival
8	☐		N 00° 00' 00.0"	E 000° 00' 00.0"	50	Arrival
9	☐		N 00° 00' 00.0"	E 000° 00' 00.0"	50	Arrival
10	☐		N 00° 00' 00.0"	E 000° 00' 00.0"	50	Arrival
11	☐		N 00° 00' 00.0"	E 000° 00' 00.0"	50	Arrival

Waypoint tracking is remotely controlled by the service center. When the waypoint tracking is turned on, the alarm (incl. position information) will be sent to the service center when the device is moving out or in to the pre-defined area. The device can also be configured to send the position information to the service center whenever crossing the borderline - despite of the moving direction.

NOTE: When entering into the pre-defined area, the alarm will be sent when crossing radius. When entering out of the pre-defined area, the alarm will be sent when crossing radius plus perimeter of 100 meters.

- **Name** (1): You may key in the desired name for a waypoint . You can define up to 30 separate, circular areas: The areas are separated from each other by an ID number and a name.
- **Center point coordinates** (2): The waypoint area is defined by keying in **Latitude** and **Longitude** and a **Radius** of an area in meters. The radius should be rounded to tens, otherwise the software does the rounding. E.g. by entering 67, the actual radius will be rounded to 70 meters. 50 meters is the minimum value.
- **Alarm** (3): After activating a waypoint, you can select an alarm option for this waypoint. You have three choices: Alarm will be turned on when arriving to a waypoint, departing from a waypoint, or whenever crossing the borderline (both directions). Each waypoint can have alarm option of its own.
- **Activation of a waypoint** (4): To activate a waypoint, check the **Active** box (on the same row), to deactivate the waypoint, leave the check box blank.

NOTE: The waypoint tracking does not contain automatic switch off or duration options. The feature must be separately deactivated when it is no longer needed.

RESETTING THE COORDINATES

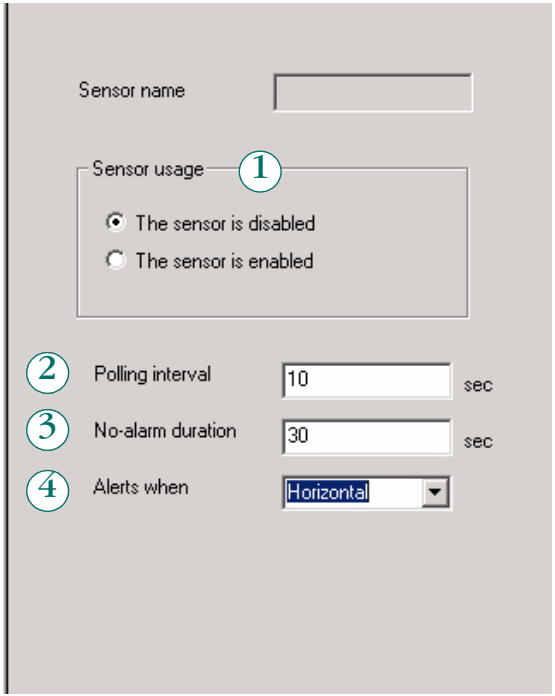
To reset the coordinate values, click the latitude and longitude data fields (the ones, you want to reset).

MARKING ALL WAYPOINTS FOR ACTIVATION/ DEACTIVATION AT ONCE

Click the **Active** box on the top row (5).

Note that activation/deactivation will actually take place only after you have transferred the information to the device.

SENSOR SETTINGS: VERTICAL SENSOR



Sensor is an additional feature. The feature is activated by an activation key supplied to you by the manufacturer. For more information, see ACTIVATING NEW FEATURES ON PAGE 13.

NOTE: The device must also have specific battery which includes the sensor component. For more information, see ORDER CODES ON PAGE 57.

The sensor unit transmits signal indicating its status. The status can be, e.g. orientation of the device: Vertical or horizontal.

Signalling of the sensor unit can cause the device to make an emergency cycle, i.e. send emergency messages and make emergency calls.

Sensor status is not monitored while the device is connected to a charger.

Sensor can also be configured by MPTP over the air.

Specifying sensor usage

You can specify sensor usage (1). By checking the corresponding box, the sensor is turned on or off.

Polling interval

The device polls the signal sent by the sensor from time to time. You can select, at which interval the polling is done, i.e. how often the status of the sensor is checked.

Set the polling interval (2) in seconds.

No-alarm duration

You can specify the time, for how long the device is allowed to be in wrong position (e.g. horizontally, if using the Vertical sensor) before any actions are taken.

Set the no-alarm duration (3) in seconds.

If the device´s orientation is not corrected during this **No-alarm duration** time period, the device makes emergency cycle. After the emergency cycle ends, the device is able to receive phone calls.

> NOTE:
>
> THIS MODEL DOES NOT OFFER ANY KIND OF AUDIOVISUAL WARNING SIGNALS TO INDICATE THAT AN EMERGENCY CYCLE IS ABOUT TO START. MOREOVER, THE ONGOING EMERGENCY CYCLE CAN BE NOTICED AS THE GSM LED STARTS TO FLASH, BUT THERE IS NO WAY TO CANCEL OR INTERRUPT THE ONGOING EMERGENCY CYCLE.

Alert trigger

You can select alert trigger for the sensor (4). Click the arrow and highlight the desired option.

E.g. by selecting **Alerts when horizontal**, you determine that the sensor´s normal orientation is vertical, and being horizontally orientated causes sensor to alert.

The device is assumed to be incorrectly orientated once the rotation angle exceeds 45°.

Missing sensor

If the special battery including the sensor unit is replaced by a normal battery, the device becomes unable to detect the presence of a sensor. In this case, the device will proceed as follows:

1. The device will send an MPTP message to the service center. The message sent is a status message with status code 112, containing the device´s last known position. For more information on this, see the separate MPTP document.
2. The device will repeat the procedure each time it is powered up.

ENCRYPTING MESSAGES

SMS and MPTP messages can be protected from outsiders by encrypting message contents. Encryption is an additional feature. The feature is activated by an activation key supplied to you by the manufacturer.

The whole procedure:
First activate the feature, next generate the keys, then select the encryption options and finally save everything in the device.

NOTE: The device must be connected to the Benefon Configurator software all the time during the procedure.

Activating encryption

To activate the feature, do as follows:

1. Connect the device with the software.
2. Open **Save activation key** from the **Mobile** menu.
3. Key in the activation key and click **Save in mobile**.

Generating keys

You need two different keys for encryption.

- **Message encryption key**: The "long key" is needed for encrypting message contents.
- **Distribution key**: The distribution key is needed for encrypting the new message encryption key (while it is sent over the air). I.e. the distribution key secures the new message encryption key during OTA transfer.

NOTE: If you generate the new message encryption key and transfer it **locally**, via the data cable, the distribution key is not needed.

To generate the keys, do as follows:

1. Open **Encrypting**>**Encrypting keys** from the **Edit** menu.
2. Check the boxes and click **Generate**.
3. When generating the keys, the new keys will be created into the files. Select the destination directory, name the file and click **Save**. Name the other key file and click **Save** once again.
4. Click **Close**.

Selecting encryption options

1. Open **Encrypting**>**Encrypting keys** from the **Edit** menu.
2. Select the desired options by checking the corresponding boxes. See below:

Encrypting based on message type

- SMS and MPTP messages are NOT encrypted.
- Only MPTP messages are encrypted.
- Only SMS messages are encrypted.
- Both SMS and MPTP messages are encrypted.

Encrypting based on destination

- Messages to service center and authorized numbers are NOT encrypted.
- Messages to service center are encrypted.
- Messages to authorized numbers are encrypted.
- Messages to service center and authorized numbers are encrypted.

3. Check the boxes in the **Save key in mobile phone**.
4. Finally save all the options and the keys by clicking the **Save in mobile phone** box in the bottom left. Browse the directory, find the key file and click **Open** (do it twice to save both keys).

CODE SETTINGS

Automatic PIN entry

The PIN code can be pre-programmed to the EEPROM of the device. It cannot be read by any means from the device. In startup the PIN code is entered automatically by the device software.

The PIN code can be changed in the Benefon Configurator by choosing **Change PIN code** from the **Mobile** menu. Key in the new code and confirm it.

The option is available only when the device is connected to the software.

Security code

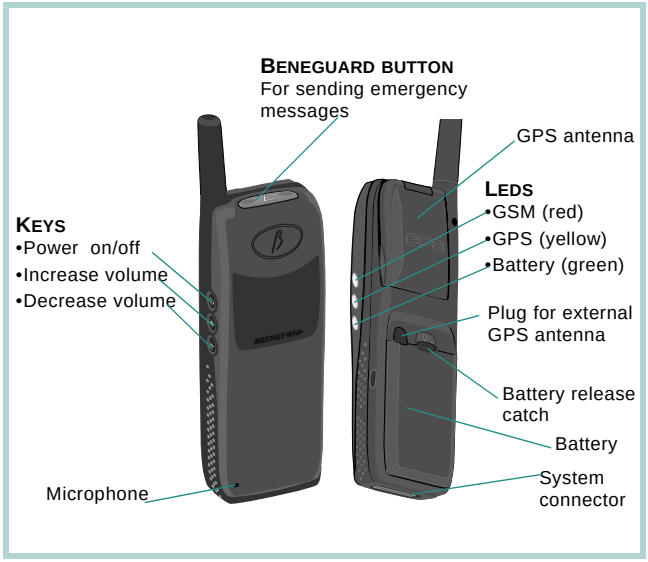
The security code secures telematic settings. If the setting is enabled, the code is requested each time when powering up the system (software in connection with the device).

The security code settings are located in the **Mobile** menu.

- **To enable the code**, check the box, to disable the code, leave the check box blank.
- **To change the code**, first click the corresponding box. Key in the old code, key in the new code and confirm it.

PART C: OPERATING THE TRACKKEEPER

USER INTERFACE



Indicator LEDs

Symbol	Meaning
■	On for 1 second
□	Off for 1 second
■	On for half a second
□	Off for half a second
...	Starts over from the beginning of the pattern

ALL THE LEDS ARE LIT IN UNION

All the LEDs are lit in union and show	Status/Action
■□ ■□■□ ■□■□ ■ (once)	Answers an incoming call. - NOTE: In order to work, a valid SIM card must be inserted, and the device must be turned on, and the auto answer must be turned on.
■□■□■□■□■□ ■□■□■ (once)	An MPTP message is received and accepted. - NOTE: In order to work, a valid SIM card must be inserted, and the device must be turned on.
■□...	Incorrect PIN. It causes the device to power-down.

BATTERY

Battery LED (green) shows	Battery status
■... (constantly on)	4/4 (battery is full)
■ ■ ■ ■■□■□... (6 sec. sequence)	3/4
■ ■ ■■□■□■□... (6 sec. sequence)	2/4
■ ■■□■□■□■□... (6 sec. sequence)	1/4
■□■□■□■□□... (5 sec. sequence) - NOTE: The pattern cannot be seen, if the LEDs are lit for some other reason at the time of this event, or if less than 5 minutes has passed since the event was last invoked.	0/4 (battery is low)
■□... (2 sec. sequence)	Charging. The LED flashes current battery status in turns with charging.

GPS RECEIVER

GPS LED (yellow) shows	GPS status
■... (constantly on)	Valid fix
■□□... (2 sec. sequence)	Sleeping (zzz)
■□... (2 sec. sequence)	Searching/Locking
□... (constantly off)	Off
■ (lit for 3 sec.) - NOTE: The LED pattern cannot be seen, if the LEDs are already lit for some other reason at the time of this event.	A valid position fix is finally acquired after searching for a while.

GSM RECEIVER

GSM LED (red) shows	GSM status
■... (constantly on)	Network available
□... (constantly off)	Off
■□... (2 sec. sequence)	Searching
■□■□■□■□□... (6 sec. sequence)	No network
■... (flashes in every 5 seconds, if the LED is not already lit for some other reason)	Power is on
■□■□■□■□■...	Active call
■□□... (2 sec. sequence)	Invalid SIM

Keys

Key	Function	Procedure
⊙ (press and hold down for a few secs)	Power-up	The device is turned on. All the LEDs are lit. The device sends a message via the system connector to inform the possibly attached external device of the power-up. An automatic PIN entry and a removal of all short messages found on SIM will take place. - NOTE: For the automatic PIN entry, the PIN code must be programmed in the device.
⊙ (press and hold down)	Power-down	The device is turned off. All the LEDs are lit.
⊙ (press briefly)	Indicator refresh	Idle mode is entered. All the LEDs will start to show their current status.
▬ (press and hold down for a few seconds)	BeneGuard-emergency call	The device is turned on. The GPS is turned on. The BeneGuard emergency cycle is started. - NOTE: In order to work, certain settings and phone numbers must be configured in the device, such as emergency center numbers and emergency confirmation setting.
+ − (press the side keys briefly)	Volume adjust	Adjusting volume within the 5-step scale. The upper key increases the volume while the lower key decreases the volume. NOTE: - The keys work only when the call is connected and Headset attached to the device.

INCOMING CALLS AND MESSAGES

For incoming calls and messages

- a valid SIM card must be inserted and
- the device must be turned on.

Incoming calls

The **Auto answer** must be turned on, otherwise an incoming call is dropped at once. For more information, see AUTOMATIC ANSWER ON PAGE 18.

Another way to receive an incoming call: The caller´s number must be stored in the list of allowed callers, and the auto answer box (associating the number) must be checked. For more information, see LIST OF ALLOWED CALLERS ON PAGE 29.

Incoming short messages

An incoming short message is echoed to the system connector, so that an external device can check it. Reading, writing, sending and receiving normal short messages via the device is possible **only in case** the device is connected to an external device, such as a computer. For more information, see SIM FEATURES: SHORT MESSAGES ON PAGE 14.

No messages are ever stored on SIM card. Even the MPTP messages are cleared once they are processed.

Incoming MPTP messages

An incoming short message is processed only if it is a known MPTP message. However, if the **Authorization** setting is enabled, only messages from authorized numbers are processed, others are discarded at once. Numbers stored as **Service center** and **Emergency center** numbers are always authorized and processed. For more information on authorization, see AUTHORIZATION ON PAGE 29.

REMOTE CONFIGURATION MESSAGE

The device may receive a specific MPTP message for the remote configuration/activation. Remote configuration/activation messages contain settings and values for e.g. Emergency numbers, Authorized numbers, AGPS-parameters, Activity timer and GPS operating mode.

For more information on remote configuration, see the document on MPTP commands, located at the Web site: **www.benefon.com**.

LOCATION REQUEST MESSAGE

The device may receive several different messages requesting location. Such messages can be, e.g. Location request messages (?LOC), or Location history request messages (?HIS). For more information on how the device responds these messages, see DEFAULT BEHAVIOUR FOR LOCATION REQUEST ON PAGE 27.

For more information on how to create location request messages, see the document on MPTP commands, located at the Web site: **www.benefon.com**.

AT commands

The device may receive an AT command via the system connector. The AT commands can be used for carrying out similar things that are done via MPTP messages.

For example, AT commands are used when configuring settings to the device locally, by using the Benefon Configurator software.

For more information on handling AT commands, please see the separate document on AT commands, located at the Web site **www.benefon.com**.

OUTGOING MESSAGES

Depending on the configuration, the device may send some MPTP messages to the service center or some other authorized number. Such messages can be, e.g.

- Power on/off, charging or battery status notifications
- Lost satellite coverage notifications
- Position updates (e.g. **Area tracking** or **Waypoint tracking**)
- Several types of calculated positions sent in sequence (e.g. when using **Tracking** or **Activity timer**)
- Individual position information sent as a response to an MPTP request (e.g. Location request, Location history request). For more information, see DEFAULT BEHAVIOUR FOR LOCATION REQUEST ON PAGE 27.
- Alert messages (e.g. when using **Vertical sensor** or **Emergency cycle**)
- Collected position history to unravel previously travelled route (e.g. when using **Trace log**)

For more information on MPTP messages, please see the separate document on MPTP commands, located at the Web site: **www.benefon.com**.

Power notifications

POWER ON/OFF MESSAGES

Turning the power of the device on or off can be restricted. If the device detects that a power restriction is set on and violated, it will notify the service center of the incident, i.e. send an MPTP message to the service center.

For more information, see SETTINGS FOR MANUAL POWER ON AND OFF ON PAGE 37.

BATTERY STATUS MESSAGES

The device can be configured to inform the service center of various incidents on its battery status. When the device detects that, e.g. the battery is low, or the temperature is too cold or warm for using the battery, the device will inform the service center by sending an MPTP message to the service center.

The message will be sent only in case the event takes place for the first time after powering on or being disconnected from the charger.

For more information, see NOTIFY SERVICE CENTER OF BATTERY STATUS ON PAGE 37.

CHARGER CONNECTION MESSAGES

The device can be configured to inform the service center of changes in charger connection. When the device detects that it is being connected to or disconnected from the charger, the device will inform the service center by sending an MPTP message to the service center.

For more information, see SETTINGS DURING BATTERY LOADING ON PAGE 20.

Resending MPTP messages

The device has MPTP message storage: If sending of an MPTP message fails e.g. in case there is no service at the moment, the device will send the message later, assuming the MPTP protocol message storage has space left to deposit the message. The storage capacity is 100 messages. After the device is in service again, these messages are automatically sent forward.

Message type: As a default value, the message type is set to Text messages.

Emergency cycle

Emergency cycle means making specific emergency call to pre-configured numbers. Depending on configuration, the emergency call can contain both (voice) calls and messages.

If an external audio (a combination of microphone and speaker) is connected, a voice call is possible. Calls can be made to mobile phone numbers, or normal phone numbers.

Messages are protocol messages sent to mobile phones via SMS. The emergency message contains both GPS coordinates and GSM network measurement report.

The emergency numbers are in priority order, starting from the top of the list. These numbers work automatically, as "a chain", through the list. If the first number is unreachable (after two attempts), the device calls or sends the report to the second number. If it is not answered either, the device will go on to the third number on the list and so on. The device tries to reach contact with the other numbers **once** before moving on to the next number on the list. If there is still no answer after going through the whole list, the calling procedure will be started all over.

BeneGuard emergency call/message is initiated by pressing the integrated BeneGuard button () on the top of the device. The button must be pressed the way it has been configured: A long press or two quick presses. For more information, see SOS ACTIVATION ON PAGE 34.

The emergency cycle is over when the calls are made and messages are sent, and the device returns to normal operation.

CHECK LIST

- **SIM card** must be inserted in the device.
- **Emergency settings** (such as Emergency center numbers, Sos activation) must be configured and transferred in the device in advance. For more information, see EMERGENCY SETTINGS ON PAGE 33.
- There must be adequately **charge left in the battery**. If the battery runs down quite easily, it might be wise to provide the device with the power battery and possibly turn off the settings which increase power consumption considerably. The device can be configured to inform of battery status, as well.

CIRCUMSTANCES WHICH MAY AFFECT ON EMERGENCY CYCLE

- Busy telephone line - applies to a voice call connection.
- Message transmission error caused by the carrier of an SMS, i.e. the network operator.
- Being in a shadow area of the GSM network at the time of the event.
- Poor GPS coverage during emergency cycle may cause the emergency cycle completion to slow down.

NOTE: If the device is permanently installed in a location where frequently occurs poor satellite coverage or weak network signal, external GPS and/or GSM antennas must be installed with the device.

MAKING AN EMERGENCY CALL WHICH INCLUDES BOTH CALL NUMBERS AND SMS NUMBERS

1. Press the BeneGuard button ( ) according to configuration: A long press/two quick presses.
2. The device sends the message including position information. If current position coordinates are not available, previous coordinates will be sent instead.
3. If the **Emergency confirmation** setting is turned on, the device will go on sending the message until receiving party sends confirmation to the device.
4. Microphone opens one-way audio: It is possible to listen in the device and its surroundings. Headset (an accessory) enables audio both ways.
5. The device alerts until the call is answered.
6. A voice call in progress.

Sensor alerts

To let the emergency cycle take place: Do nothing.

To cancel sensor alert and prevent emergency cycle from starting, lift the device up to vertical position. Do it before the **No-alarm duration** expires.

NOTE: There is no way to cancel or interrupt the emergency cycle once it has already started.

In case the device cannot detect the sensor, it will inform the service center that the sensor is missing.

POSITIONING FEATURES

Responding location request messages

The device may receive several different messages requesting location. Such messages can be, e.g. Location request messages (?LOC), or Location history request messages (?HIS). For more information on how the device responds these messages, see DEFAULT BEHAVIOUR FOR LOCATION REQUEST ON PAGE 27.

For more information on how to create location request messages, please see the separate document on MPTP commands, located at the Web site: **www.benefon.com**.

Device also checks if an AGPS can be retrieved and requests it automatically to speed up calculation. Using the AGPS requires that the parameters for the AGPS are configured in the device. For more information on AGPS settings, see ASSISTED GPS (AGPS) ON PAGE 22.

Network positioning support

The device can be requested to send its current GSM network parameters at any time. Requesting number can be e.g. service center. The message that the device sends as a response is called the Network Measurement Report (NMR).

The device will send network parameters to the requesting number automatically in two cases:

- Authorization is enabled and the requesting number is authorized.
- Authorization is entirely disabled and the service center number is NOT configured in the device.

Emergency and service center numbers, and numbers stored as Authorized numbers are always authorized.

If the authorization is enabled and the position request comes from an unauthorized number, the device will discard the request.

If the service center number is defined and authorization is disabled, the response is always sent to the service center number.

The Network Measurement Report contains rough data and the position needs to be separately calculated by taking into account surrounding base stations and distances in between them. Calculation of the position needs a separate server, available from Benefon Partners. The device cannot calculate the position based on network parameters by itself.

Activity timer procedure

1. The activity timer is activated as soon as the time set in the **Start time** data field matches with the current time.
2. The device will be turned on. This automatic power-up does not cause the LEDs to be lit.
3. The position is calculated and sent to the service center according to configuration. For more on configuring activity timer, see ACTIVITY TIMER ON PAGE 17.
4. The device will then remain in idle mode for the pre-defined time after which it will be turned off.

However, the power-down can be postponed by sending a Location Request message (?LOC) to the device. Postponing might be necessary for completing all ongoing events before the power is turned off.

All tracking messages, including ?LOC messages override the **Interval** time set in the **Activity timer**.

Transferring trace log

LOCAL TRANSFER

When the device returns home, it is connected to the Benefon Configurator by data cable. The log will be loaded from the device to the software the same way as other settings. For more information, see CONNECTING THE TRACKKEEPER TO THE BENEFON CONFIGURATOR ON PAGE 10 and LOADING SETTINGS FROM THE TRACKKEEPER TO THE SOFTWARE ON PAGE 11.

When the Benefon Configurator loads the log directly from the device, the trace log file appears automatically in the display in readable text format.

The **Trace log** icon is shown under **My Benefon** node on the left, and by clicking the icon the actual trace log file will be shown in the Document window on the right.

REMOTE TRANSFER

The device sends the log to the service center remotely, as a trace data call, using Z-modem protocol.

Normal speed for data transfer in the GSM-network is 9600 baud. Since the Benefon products support higher speed, the transfer can be sped up to 14400 baud, in case the higher speed is supported by the network and SIM card, as well. Speed configuration can be done by specific MPTP message.

The computer must contain a modem application which supports Z-modem protocol (e.g. Windows Hyperterminal). NOTE: Check the modem settings. Serial port must be correct, and transfer speed must be set according to receiving phone. E.g. when using the Benefon mobile phone as the receiving phone, transfer speed must be set to 19200 bits/second.

During the transfer, the receiving mobile phone must be connected to the computer by a data cable.

In order to make the modem answer automatically incoming data calls, key in the command ats0=1 and press Enter on the keyboard. The command is associated with the receiving mobile phone. The automatic answer for data calls can be turned off by keying in the command ats0=0.

NOTE: Automatic answer setting of the receiving mobile phone is for voice calls, not data calls and thus it must be turned off.

The incoming log file will be found in your computer. Default destination directory depends on modem settings and can be changed. In most cases the log file can be located at the root directory of the modem application.

The binary-coded log file name contains U (or some other) letter and the phone´s serial number. The log file identifier is **.bin**.

Sample case by using Windows Hyperterminal

STEP1: CONFIGURING MODEM APPLICATION FOR DATA RECEPTION

1. Connect the receiving mobile phone to the computer by data cable and open the **Windows Hyperterminal** modem application.
2. Open **New connection** (from the **File** menu if the dialog box is not displayed).
3. **Name** the connection -> **Ok**.
4. Select **port** for the connection (e.g. COM1) -> **Ok**.
5. Set transfer speed to **19200 Bits/Second** ->**Ok**.
6. Open **Receive file..** from the **Transfer** menu.
7. Click **Browse** and find the desired destination directory ->**Ok**.
8. Select **Z-modem** for **Receiving protocol** ->**Receive**.

When the modem configuration is done, you may save the file by clicking **Save as...** from the **File** menu.

Close the connection by clicking **Disconnect** from the **Call** menu.

From now on, whenever you need this connection, you can use the profile just created by selecting **Open...** from the **File** menu.

STEP2: RECEIVING REMOTELY SENT LOG FILE

Connect the receiving phone to the computer by data cable/BWcable and open the **Windows Hyperterminal** modem application.

To ensure the connection between mobile phone and the modem, you may key in **ATI** on the screen and press Enter -> the modem will identify receiving mobile phone.

Key in **ats0=1** and press Enter -> the mobile phone will answer automatically incoming CSD calls.

When the mobile phone starts alerting, the modem will display **RING**. When the mobile phone answers, the data transfer dialog box appears on the screen. When the transfer is finished, the dialog box disappears and the connection can be switched off.

If you do not use the automatic answer, do as follows (when the phone starts alerting): Press the Hook-up key on the phone keypad OR key in **ATA** on the screen and press Enter.

OPENING AND PROCESSING REMOTELY SENT LOG FILE (IN THE BENEFON CONFIGURATOR)

Start the Benefon Configurator and open the trace log file as follows:

1. Highlight the **Trace log** icon shown on the left side of the screen, under **My computer** node.
2. Choose **Open** from the **File** menu (or, click the mouse´s *right* button and highlight **Open**).
3. Click the **Files of type** setting and highlight **All Benefon Configurator files**.
4. Browse the directories and files until the destination directory and file is found. The file identifier is **.bin**. Click **Open**.

Trace log file is originally in binary-coded format. When the file is opened in Benefon Configurator, the software generates the file and displays it as a table in a readable text format.

If you want open and process these **.bin** files in some customized application (other than Benefon Configurator), please contact your Benefon Partner for detailed directions.

Saving the log file

To save the trace log in Benefon Configurator, choose **Save** or **Save as..** from the **File** menu. The trace log file will be saved in readable text format (.log).

Deleting the log file

To delete the trace log in Benefon Configurator, choose **Delete trace log** from **Mobile** menu.

NOTE: If you delete trace log from **My Benefon** node, the log is lost once and for all. So, make sure the log is stored in some place else in case you need to recall the log information afterwards.

PROCESSING TRACE LOG BY USING SOME OTHER APPLICATION

Trace log files cannot be edited in Benefon Configurator. In order to **modify** or **print** the log file, do as follows:

1. First save the log in Benefon Configurator. The log file identifier will become **.log**.
2. Open Windows Excel or Notepad. Make sure, the **Files of type** shows **All files**.
3. Open the log file in the chosen application.

PART D: POWER MANAGEMENT

POWER SUPPLY

- Mains charger CMA-70-230 (with the standard charger cable FMC70, or robust charger cable FMC79)
- Cigarrette lighter charger CCS-71-12
- Standard Li-Ion batteries
  - 650 mAh (BBL77S)
  - 900 mAh (BBL77N)
  - 1200 mAh (BBL77P)
  - 1700 mAh (BBL77G).
- Special Li-Ion battery 1200 mAh, including Vertical sensor component (BBL79P).
  - Note that this special battery only works under these conditions: The NT 2.0 software is installed and the Vertical sensor feature is activated in the device.

The battery type may vary depending on the market area and sales package. In unclear cases, check the battery compatibility with the dealer.

MAINS CHARGER

The mains charger should only be used indoors. Make sure that the voltage in the country which you are staying corresponds to the voltage (230 V) of the charger.

When charging, connect the charger (round) end of the cable into the charger base and lock it by turning it half a turn clockwise. Plug the cable´s square end/flat end (with the arrow/button facing up) into the system connector on the device.

Plug the charger into a mains outlet. Charging will start automatically.

The mains charger is provided with the device, but is also available from the assortment of Benefon accessories. For more information on other charger types, see PART E: ACCESSORIES ON PAGE 57.

CHARGING

The battery must be fully charged before taken into use. The battery will reach its full capacity only after two or three charging times.

The device controls the charging status, the battery temperature and power supply during the charging operation. You can find out the status of the battery by monitoring the indicating battery LED.

The ideal temperature range for charging is +10°...+30°C. If charging the battery above or below these temperatures, life of a battery may be shortened. Also, the battery may not reach full capacity.

Never charge the battery at temperatures below 0°C.

Charging time depends on what kind of a charger and battery you have in use. When charging the Li-Ion batteries with the quick charger, about 70% of the battery capacity will be charged quickly, but charging the remaining 30% takes relatively more time.

Also note that humidity, temperature, age of the battery and currently used features (e.g. the GPS) affect the time spent on charging.

BATTERY CARE AND MAINTENANCE

The continuous operating time is less when using an old battery than when using a new battery.

When storing batteries for a long time, it is recommended that the batteries are kept cool and fully charged in a dry place.

Proper care and storage guarantee best possible battery capacity and maximum battery life.

DISPOSAL OF A BATTERY

Li-Ion batteries do not contain heavy metals which can damage the environment. Li-Ion batteries should be disposed of according to the country-specific regulations.

PART E: ACCESSORIES

You will find complete and updated list of accessories in the web site: **www.benefon.com**.

ORDER CODES

BATTERIES

Code	Part
ZE2400	Standard Li-Ion battery, 650 mAh
ZE2402	Standard Li-Ion battery, 900 mAh
ZE2401	Standard Li-Ion battery, 1200 mAh
ZE2403	Standard Li-Ion battery, 1700 mAh
ZE2415	Vertical sensor Li-Ion battery, 1200 mAh

CHARGERS

Code	Part
ZE1106	Mains charger CMA-70-230, Std cable (EUR model)
ZE1109	Mains charger CMB-70-230, Std cable (UK model)
ZE1110	Mains charger CMD-70-230, Std cable (US model)
ZE1111	Mains charger CMC-70-230, Std cable (AU model)
ZE1112	Mains charger CMA-70-230, Robust cable (EUR model)
ZE1113	Mains charger CMB-70-230, Robust cable (UK model)
ZE1114	Mains charger CMD-70-230, Robust cable (US model)
ZE3510	Cigarette lighter charger CCS-71-12

CABLES FOR DATA TRANSFER

Code	Part
ZE2306	Data cable APC70
ZE2406	Data/NMEA cable APC77

EXTERNAL ANTENNAS

Code	Part
ZE2408	External GPS antenna, Radiall
ZE3232	External GSM antenna, Cottage mount
ZE2102	Cross-country GSM antenna

OTHER ACCESSORIES

Code	Part
ZE5520	Headset
ZE3117	Light holder
ZE5314	Carrying case (trendline)
YC2608	GSM antenna adapter (for connecting cottage antenna)

ABOUT GSM ANTENNA ADAPTER

A GSM antenna adapter is needed for connecting an external GSM antenna to the device. An external GSM antenna is needed if the device is installed or used in such a location or area where frequently exists poor GSM coverage.

The adapter is a standard cable containing two separate connectors:

- SMA for the device.
- FME for the external antenna.

Device´s own antenna must be disconnected when attaching the GSM antenna adapter.

PART F: IMPORTANT SAFETY INFORMATION

CARE AND MAINTENANCE

NOTE: The instructions below apply to the device, its accessories, batteries in use as well as batteries taken out of use.

- Dust and dirt may damage the moving parts of the device. Do not use or keep the device in dusty or dirty surroundings.
- Do not open the device or battery by yourself or pierce holes in it.
- Rough handling may break the circuitry inside the device. Do not drop, knock, twist or shake the device or its battery.
- Keep the device dry. Liquids contain minerals which could corrode electronic circuits. If the device gets wet, turn it off and dry the device and the battery immediately. Put the device into an upright position and let it dry. It is recommended that a dealer or service personnel check that the device functions properly.
- Even though the device is splashproof, do not wet the device unnecessarily or immerse it in water.
- Protect the device from heat. High temperatures may shorten the life of the electronical devices, melt or warp plastics and damage batteries. Do not warm up the device or battery or use it near fire.
- Do not short-circuit the battery. Exposing the metal strips of the battery to a close contact with a metallic object, such as a coin, a clip or a set of keys can cause accidental short-circuiting and damage the battery.
- Charge and recharge the battery only with the charger specified in the manual. Use the battery only for the purpose it is intended.
- Clean the device with a soft cloth, dampened slightly with mild soapy water. Do not clean the device with harsh chemicals, solvents or other corrosive substances.
- Only allow service personnel authorised by the dealer to service the device.

SAFETY AND PRECAUTIONS

Telematics protocol

MPTP (Mobile Phone Telematic Protocol) allows, among other things, tracking of the device over the SMS communication.

Automatically sent telematics messages are only allowed to authorised numbers configured in the device. Such numbers can be, e.g. emergency and service center numbers.

Position of the device is retrieved by the GPS, or by the network parameters - the latter is a network-dependent service.

The carrier for telematics messages is an SMS-message. Deliveries of all messages is fully handled by and in the responsibility of the GSM network operator and services can vary substantially.

The charge of a protocol message is determined on the contract by the service provider.

GPS

The Global Positioning System (GPS) is operated by the government of the United States, which is solely responsible for its accuracy and maintenance. The system is subject to changes that could affect the accuracy and performance of all GPS equipment.

Emergency calls

The device is an aid and should never be relied upon as an only emergency device. Its functionality is dependent on GSM network and GPS satellites which may not be available all the time.

To make emergency calls, the device must be turned on and located in an area with adequate GSM network signal strength. Making BeneGuard emergency call also requires GPS satellite coverage and a valid SIM-card.

Emergency calls may not be possible on all GSM phone networks or when certain network services or phone features are in use. In unclear cases, consult your network operator.

General

- **Traffic:** Strictly adhere to all eventual European and national legislation and also honour other eventual safety recommendations when using the device while driving a vehicle. Place the device in its holder, do not leave it on the passenger seat or some other place where it can break loose in a collision or a sudden stop. When receiving a call in an awkward driving situation, you must always put safety before other priorities and courtesy. If you feel uncomfortable about using a device while driving, you should not use it.
- **Vehicles with air bags**: An air bag inflates with great force. Do not place objects, including either installed or portable wireless devices, in the area over the air bag or in the air bag deployment area.
- **External alert:** The use of the alert device to operate a vehicle´s lights or horn on public roads is not permitted.
- **Children:** Keep the device and its accessories away from small children to avoid causing injury to themselves or others. Damage to the device or its accessories is also thus avoided.
- **Power supply:** This equipment is intended for use with the specified power supplies listed in the Operating Instructions. Any other usage will invalidate any approval given to this apparatus and may be dangerous.
- **Other accessories:** Any other accessories used should also be approved by the device manufacturer. Check the compatibility of new power supply units and other accessories at the dealer.
- **Connections**: All installations, connections and service regarding the device, its power supply and accessories should be approved by the device manufacturer. Use of any unauthorized accessories, modifications or attachments may be dangerous and voids the device warranty if said accessories cause damage or a defect to the device.
- **Magnetic fields**: The device contains small magnetic components. Even though the magnetic fields of the components are weak, they might damage magnetic cards, such as bank and credit cards. We recommend that you would keep the device away from magnetic cards.
- **Storing positions**: Position information is stored correctly in the device when the GPS is turned off (from the GPS menu) or powered off (by pressing the topmost side key). To prevent the memory from becoming corrupted, never power off the device by removing the battery.

Radio frequency (RF) energy

- **Aircrafts:** Turn your device off before boarding any aircraft and do not use the device while in the air, also make sure that the automatic timer function will not activate the device during a flight. Besides being illegal, the use of a device in an aircraft may endanger the operation of the aircraft or disrupt the mobile network. Failure to comply with this instruction may lead to suspension or denial of mobile phone services, and possibly even legal action.
- **Hospitals:** Turn your device off before entering hospitals or other health care facilities where medical electronic equipment may be in use. Such devices can be extremely sensitive to radio frequency interference. Only use the device with permission and under the instruction of hospital staff.
- **Medical devices:** Remember that any personal medical devices (such as hearing aids or pacemakers) may be affected by RF energy if they are not adequately shielded. Consult the manufacturer or vendor of the equipment to determine the proper shielding.
- **Posted facilities and country-specific regulations:** Power down the device in any facility where posted notices so require. Also follow all the country-specific regulations applicable to where the device is used.
- **Potentially explosive atmospheres:** Turn off the device at refuelling points, e.g. gas stations. Also observe restrictions on the use of radio equipment in fuel depots, chemical plants or where blasting operations are in progress because remote control RF devices are often used to set off explosives. Do not store or carry flammable liquids, gases or explosive materials in the same compartment as the device, its parts or accessories.
- **Other electronical equipment:** Using the device may cause interference with a vehicle's electronic equipment if it is not adequately shielded. Consult the manufacturer or the vehicle seller to determine the proper shielding.
- **Computers:** Remember that using the device close to a computer may cause interference. When using your device near such equipment keep a distance of about one meter.
- **Body parts:** When the device is in operation do not touch the antenna with eyes, mouth or bare skin to guarantee proper function.

BENEFON WARRANTY

A warranty certificate with the date of purchase is enclosed in the delivery. Service operations are carried out for free at Benefon during the warranty period.

BENEFON warrants its products to be free of defects in material or workmanship when leaving the factory. If a defect is found during the given warranty period, the customer should without delay and latest within the given warranty period return the product, together with the warranty certificate and the purchase receipt, to the BENEFON dealer who sold the product or, if this is not feasible, to any other authorised BENEFON sales or service facility.

A defective product with valid BENEFON warranty will be made good by having it repaired or replaced, as seen appropriate by BENEFON in each case. Repair or replacement of the product does not extend the original warranty period.

The warranty does not cover defects caused by using the product with peripheral equipment or accessories not supplied or approved by BENEFON, or defects caused by repairs or modifications carried out by parties not authorised by BENEFON.

Neither does the warranty cover defects directly attributable to abuse, misuse or accident of any kind nor changes in consumable parts (e.g .batteries) attributable to normal wear and tear.

The warranty is void if the manufacturing identity data attached to the product have been altered, erased or rendered unidentifiable.

BENEFON assumes strictly no responsibility for special, incidental, punitive or consequential damages, or loss of use.

The warranty period of this BENEFON product expires in .....

BENEFON dealer who sold the product.....

.....

.....

IMEI code/serial number.....

.....

BENEFON

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