BENEFON TRACKBOX 2.1

Operating Instructions

CERTIFICATION INFORMATION

- FCC ID: QFPTGP78AB
- IC: 4350ATGP78AB

NOTE: Before you start using the device, carefully read through the device documentation: Installation Guide and Operating Instructions, especially Important safety information at the end of this manual.

Manufacturer:
Benefon Oyj, P.O. Box 84, 24101 Salo, Finland
Web site: www.benefon.com

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TRACKBOX 2.1 OPERATING INSTRUCTIONS

PART A: CONFIGURING SETTINGS FOR THE TRACKBOX

There are two ways to configure settings for the Trackbox:

- You can use **MPTP commands** and transfer settings *remotely*, over the air by sending a protocol message to the device.

- You can use the **Benefon Configurator software** for configuring settings and transfer them to the device *locally*, via the BWTrackbox data/NMEA cable. The BwTrackbox cable must be purchased separately, it is not included in the Trackbox sales package.

  - Benefon Configurator is compatible with Trackbox 2.1 versions starting from GSM 2.Jxxxxx and IOB 040326

  - Benewin Trackbox software is compatible with former Trackbox versions.

MPTP MESSAGES AND REMOTE CONFIGURATION (OTA)

MPTP configuration commands are used when **a remote** update of the device configuration is needed.

Update can include all telematics settings and phone numbers, such as emergency numbers, status messages, authorized numbers, GPS operating mode. MPTP updates also include commands for daily usage, such as location request and tracking commands.

The remote configuration can be used for transferring the settings only in case the settings are coded as MPTP messages.

For more information on MPTP messages, please see the separate documents: Mobile Phone Telematics Protocol (MPTP), located at the Web site: **www.benefon.com**

THE BENEFON CONFIGURATOR SOFTWARE FOR TRACKBOX

The Benefon Configurator software is intended for configuring settings locally for the Trackbox.

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. The settings done with the Benefon Configurator can be transferred to the Trackbox via the BWTrackbox cable.

Another, slightly quicker way to transfer configurations made by Benefon Configurator is to use the **SetupLoad** software.

The Benefon Configurator for Trackbox 2.1 consists of six main groups of settings: **Short messages**, **Phone books**, **User settings**, **Telematics settings**, **I/O settings** and **Waypoint tracking**. The settings are divided up into pages and groups including several data fields, such as **Tracking settings**, **Emergency settings**, **Log settings**, **Message settings**, **Protocol settings** and so on.

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

Connecting the Trackbox to the Benefon Configurator
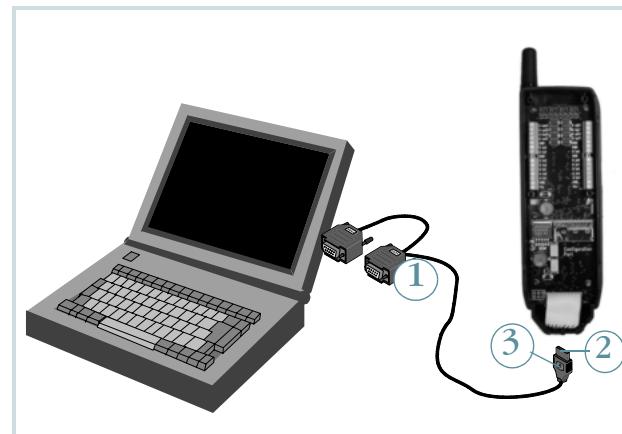
1. The BWTrackbox Data/NMEA cable may contain two square-end adapters. Plug the **data adapter** (1) into a serial port. Serial ports are located at the back panel of your computer.

2. Next remove the back cover of the device by screwing it off. Plug the **flat end of the BWTrackbox cable** (2) in the configuration port of the device. Make sure the release button (3) is facing up.

THE CONFIGURATION PORT

In order to transfer configurations made by Benefon Configurator, the BWTrackbox cable must be plugged in the device´s configuration port.

The **configuration port** is located inside the device, in the lower part of the accessory module.

Only in case the BWTrackbox cable is intended for **continuous** use, you may pierce a hole to the elastomer for the cable inlet. Otherwise, leave it intact for improving dust and water protection.

3. Open the **Benefon Configurator**.

4. Choose the correct serial port from the **toolbar**: Click the pop-up menu and highlight the desired port.

Or, choose **Settings** 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.

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

6. The software establishes a connection to the device and renames **My Benefon** node according to the type and the model of the device, in this case **Trackbox**.

7. 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. These settings and menus are shown as sub-nodes, such as **User settings,** and **Telematics settings**. The nodes are structured as the **Benetree** on the left side of the display.

8. 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 48**.

9. Click the name label **Trackbox**. The sub-nodes will be displayed as icons on the working area, i.e. the **Document window**, on the right.

10. You can select the desired sub-node/icon by clicking it. The data fields will be displayed.

Loading settings from the Trackbox to the software

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

To load only part of the settings to the software, choose **Configurator** from the **Edit** menu (before pressing **Connect** button). Check the desired setting groups - the groups are shown in the **Mobile phone start up tasks**. Click **Ok** while the dialog box is displayed.

Unloaded settings can be loaded afterwards 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 "off-line" 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.

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.

Changing default mobile phone

When any Benefon phone (or device) is connected to the Benefon Configurator, the software identifies it automatically, and offers you the 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 **Configurator...** from the **Edit** menu, or highlighting the desired 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 the **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**.

Transferring settings from the software to the Trackbox

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

1. First open the Benefon Configurator document which content you want to save in the Trackbox.
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.

Disconnecting the Trackbox from the software

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

2. Press and hold down the release button while removing the BWTrackbox cable from the device. (The release button is located on the top of the flat end of the BWTrackbox cable.)

3. In case the inlet for the BWTrackbox cable is pierced, but the cable is taken off, the hole must be covered with some waterproof material, such as a piece of firm tape or silicon. This needs to be done for improving water protection.

4. Screw the back cover back in.

ACTIVATING NEW FEATURES

Some of the new features are sold separately, they are not included in the basic 2.1 software package. Such feature is, e.g. Encryption.

When you purchase some 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. Activation can also be done via MPTP messaging. For more information on MPTP commands, see the separate Mobile Phone Telematics Protocol (MPTP) document.

1. First make sure, the phone has a 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**.

5. Click **Save**.

6. Click **Disconnect**.

SHORT MESSAGES

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

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

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

Reading and editing existing messages

1. Open the Benefon Configurator.

2. Double-click the icon **SMS messages**.

Messages are listed and can be read.

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

Deleting a short message

To delete a short message, highlight the message and choose **Sms**, **Delete message** from the **Edit** menu.

Or, select **Delete** by pressing the mouse´s right button.

Writing and sending a short message
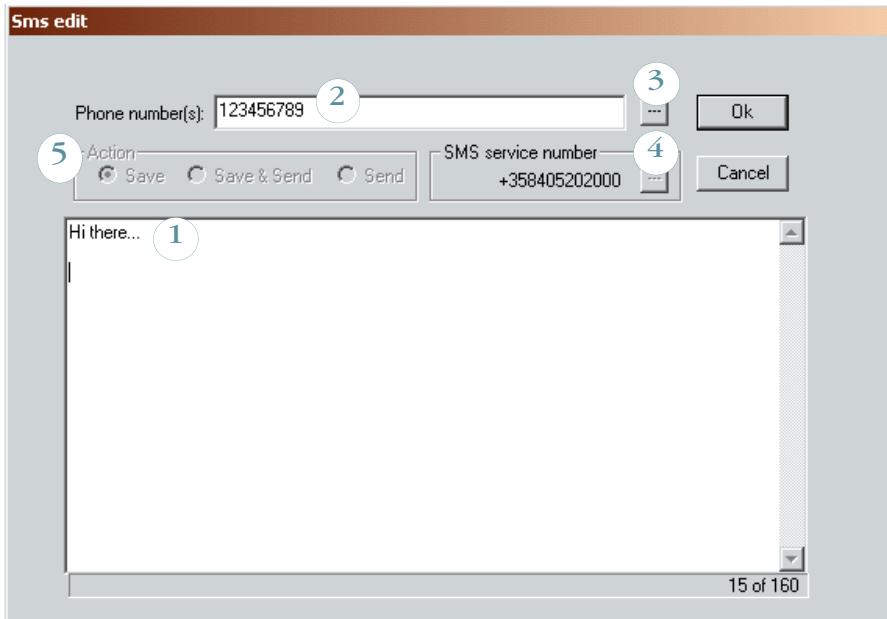
1. Choose **Sms**, **New message** from the **Edit** menu. The **SMS edit** buffer will be displayed.

2. Key in the message text (1) and the recipient´s number(2). By clicking the square next to the number (3), the recipient´s number can be fetched from the **Phone book**, assuming the number is found on SIM.

3. Make sure, the **Sms service number** is correct. The number can be changed by clicking the square next to it (4). 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 service number.

4. Select the desired Saving/Sending option by checking one of the **Action** boxes (5). Complete the message by pressing **Ok**.

PHONE BOOKS

As you open the **Phone books**, the memory entries stored on the SIM card are listed and can be processed. **Index** number stands for memory slot number.
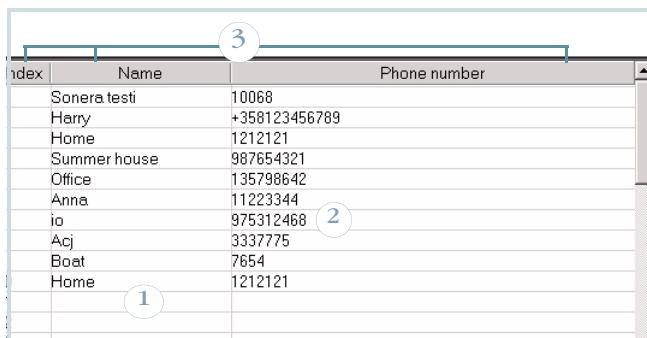
Editing and adding an entry

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 the 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.

Arranging entries

Arrange the phone book by **Index**, **Name**, or **Number** (3) either by

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

• **View by**: This option rearranges the phone book **temporarily**. When transferring the phone book data back to the phone, the data will be arranged by the old order.

• **Sort by**: This option rearranges the phone book **permanently**. When transferring the phone book data back to the phone, the data will be arranged by the new order.

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.

Copy	Cut	Paste

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** in the dialog box.
   - To preserve the old information and transfer the new information to another, free slot (Index number), click **No** in the dialog box.

USER SETTINGS

Phone time and date

Phone time	
Date	2. 5 .2003
Time (GMT)	14:40:37
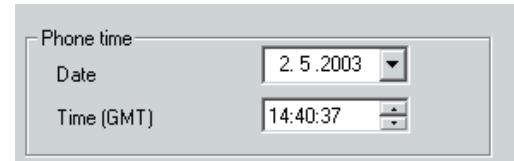
Time and date can be set in the Benefon Configurator. Key in the time and date in the GMT format ("Greenwich Time"). Date and time can be selected by clicking the arrows, as well.

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

Activity timer

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, the timer will return to sleep for the next wake-up.

Power up/down cycle is reasonable for saving power, especially in case the device is a plain battery model.

SETTING THE ACTIVITY TIMER
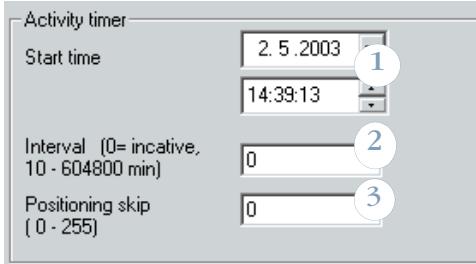
1. **Start time**: Key in the date and time, when the timer is switched on for the first time. Start time can be selected by clicking the arrows (1), as well.

2. **Interval**: Key in the interval for wake-up (2). If the interval is set to zero, the timer is NOT in use.

3. **Positioning skip**: It may not be necessary to determine current position each time when the timer is turned on. By setting a value N for the position skip (3), the device can be programmed to only determine the position every Nth time the timer is turned on.
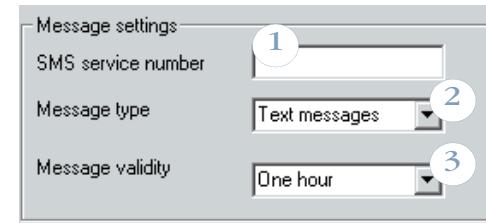
Message settings

SMS SERVICE NUMBER

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

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. For more information, see .

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

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 TIME

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).

NOTE: The length of validity for *telematics protocol messages* is selected in **General telematic settings**. For more information, see **GENERAL TELEMATIC SETTINGS ON PAGE 26**.

Port and audio settings
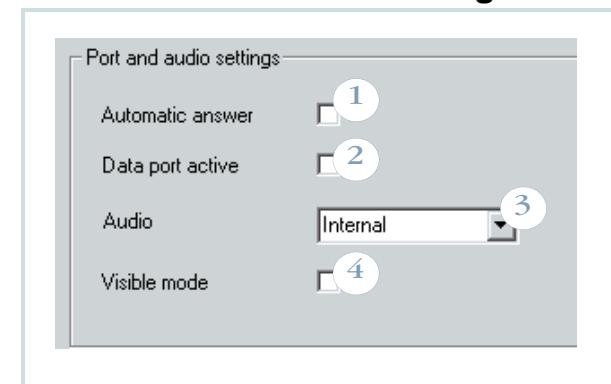
AUTOMATIC ANSWER

The automatic answer function can be turned on or off (1).

• If the **Automatic answer** is turned on (the box is checked), 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 **GENERAL TELEMATIC SETTINGS ON PAGE 26**.

PART A: CONFIGURING SETTINGS FOR THE TRACKBOX

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

DATA PORT ACTIVITY

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

Turning the data port off decreases power consumption (2).

• To turn the data port on, check the box.

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

AUDIO

• Internal: The device contains an internal microphone and uses it.

• External: Audio comes from some external device via the configuration port.

Click the arrow and highlight the currently used 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 the Trackbox Installation Guide.

Invisible mode is for making the device more difficult to detect (4). In invisible mode only some of basic LED patterns are lit, e.g. powering up/down. This way e.g. sending emergency messages can be done very discreetly.

Settings during battery loading
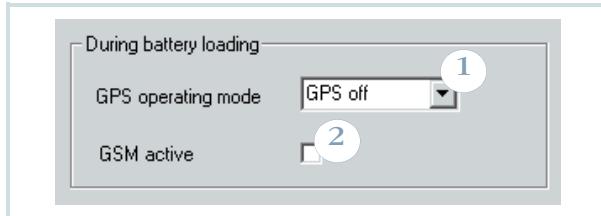
GPS OPERATING MODE

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 or

• 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 (2).

In case the GSM functions are needed even during the charging, this setting must be turned on: By checking the box, the GSM is activated during charging.

GPS settings
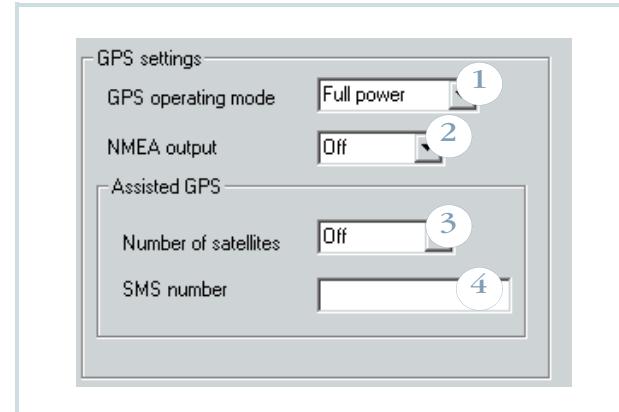
GPS OPERATING MODE

The GPS receiver in the Trackbox uses power saving options for ensuring maximum battery capacity.

The GPS receiver has three modes (1):

• **Off**

• **Low Power** with the power saving option

  - the time needed for position fix depends on conditions. If the GPS does not manage to calculate the position, it will fall asleep for a while and retry to calculate the position later on.

• **Full power** without the power saving option.

Operating mode depends on the way, the device is used.

Autonomous system, i.e. a plain battery model, normally uses either **Low Power** or **Off** mode, while a device with constant power supply uses **Full Power** mode (i.e. the standard and I/O models).

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 BWTrackbox Data/NMEA cable (an accessory).

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

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

ASSISTED GPS (AGPS)

Trackbox 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.

- **Number of satellites:** Select the number of satellites (3). 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 (4).

TELEMATIC SETTINGS

Tracking settings

TRACKING

Tracking 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.

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.

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**. For more information, see GENERAL TELEMATIC SETTINGS ON PAGE 26.

Duration

You can select, for how long or on what terms tracking will be on (1a). 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.

- **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 (1b).

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.

You can activate tracking by sending a specific MPTP message to the device.

AREA TRACKING

Area tracking 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.

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.

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**. For more information, see .

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 (2a).

Center point

Key in the center point name (e.g. Home) and enter coordinates (2b).

Radius

Key in the desired radius in 10 meters (2c). E.g. by entering 5, your actual radius will be set for 50 meters (minimum).

Alarm mode

You can set an alarm to alert when crossing the borderline of an area (2d).

The alarm can be set to alert either when arriving in or departing from the particular area.

Activation

Make sure 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.

You can activate area tracking by sending a specific MPTP message to the device.

DEFAULT BEHAVIOUR FOR LOCATION REQUEST

The device may receive several different messages requesting location. Such messages can be, e.g. Location request (?LOC) messages, or Location history request (?HIS) messages. (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. 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** (4a): 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** (4b): 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** (4c): 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.

REAL TIME TRACKING

Real time tracking can be initiated by sending a detailed MPTP message to the device.

Real time tracking is done via CSD data call. After successful connection, the device starts to forward NMEA data directly from the GPS over CSD call.

If sending a CSD call fails, the device will send an SMS message informing what went wrong.

- Key in the **CSD number** (3a). The number must be configured in the device before the function can be used.
- Key in the **SMS number** (3b). The number must be configured in the device, 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 for the service center (1).

LIST OF ALLOWED CALLERS

You can set several numbers for allowed callers. 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.

Key in the name and the number of an allowed caller (2). If you want the device to answer automatically to calls coming from certain numbers, make sure to check those boxes, as well.

PROTOCOL SETTINGS

Authorization

You can select whether the device receives protocol messages **from anyone or only from authorized numbers**. Click the arrow and highlight the desired option (3).

- If the authorization setting is Enabled, only authorized numbers are valid senders of a protocol message and reply to the protocol message will be sent back to the same number.

- If the setting is Disabled, the sender of a protocol message can be anyone, e.g. the message can be sent from the Internet or the number can be blank. If the service center number is set, reply is always sent to the service center. If the service center number is NOT set, reply is sent to the sender of a protocol message (assuming the sender´s number is available).

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 (4).

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.

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

The length of validity for normal SMS messages is selected elsewhere, in the **User settings**. For more information, see **MESSAGE VALIDITY TIME ON PAGE 18**.

SMS center number

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

Key in the SMS center number (5).
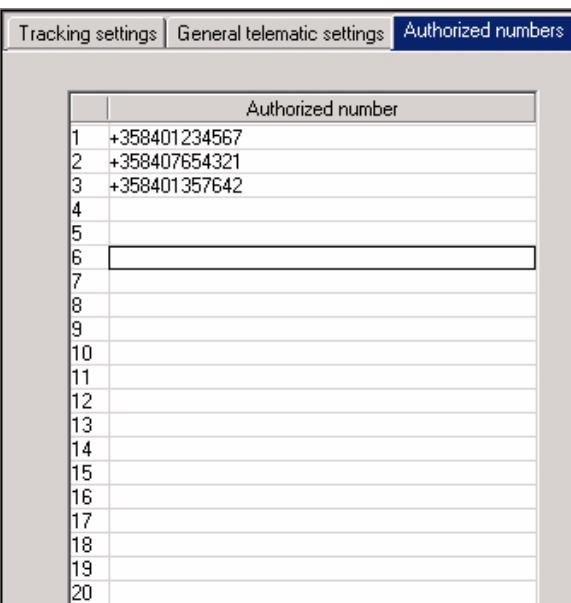
Authorized numbers

The device is allowed to respond to protocol messages from the *authorized* numbers automatically, at any time.

Authorized numbers are:

- the numbers stored in the **Authorized numbers** list *and*
- the **Emergency center numbers** *and*
- the **Service center number**.

For more, see **SERVICE CENTER NUMBER ON PAGE 27** and **EMERGENCY CENTER NUMBERS ON PAGE 32**.

NOTE: If the requesting number is *unauthorized*, sending response depends on **Authorization** and **Service center number** settings.

- **Authorization** setting **Enabled**, -> The device ignores the request, i.e. does nothing.
- **Authorization** setting **Disabled**, **Service center number** NOT set ->Response goes to the requesting number.
- **Authorization** setting **Disabled**, **Service center number** is set ->Response always goes to service center.

For more on **Authorization** setting, see **AUTHORIZATION ON PAGE 27**.

Notifications

| Tracking settings | General telematic settings | Authorized numbers | **Notifications** |

Poor satellite coverage

Notify service center after [10]   **1**   min

Notify service center of battery status ☑   **2**
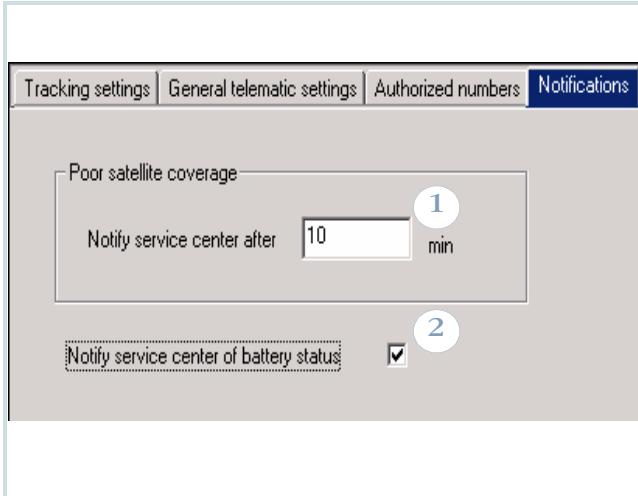
POOR SATELLITE COVERAGE

Notify service center when satellite coverage drops: 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 (1).

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.

I/O SETTINGS

Emergency settings

EMERGENCY CONFIRMATION

You can request the emergency center to send *a confirmation* of the emergency message. The emergency center will then send the confirmation to the device as soon as it receives the emergency message. Check the box to enable confirmation, or leave the check box blank to disable confirmation (1a).

You can also specify *a waiting time,* i.e. for how long a time the device waits for the confirmation before trying to reach some other emergency center number. Click the arrow and highlight the desired option (1b).

EMERGENCY CALL CYCLE MODE

You can define the order for making emergency voice calls and sending emergency messages while the emergency call cycle is on (2).

You have two choices:

• **Alternately**: The device will make a voice call and send an SMS in pairs according to the list order, starting from the top.

• **First SMS, then calls**: As the emergency call 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.

EMERGENCY CALL CONNECTION WAITING TIME

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

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

EMERGENCY CENTER NUMBERS

The emergency (SOS) messages are sent and emergency calls are made to the numbers stored in the emergency center list (4).

The emergency call (i.e. emergency cycle) can contain both (voice) calls and messages. 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 numbers are in priority order, starting from the top of the list. These numbers work as "a chain":
If the first number is unreachable (after two attempts), the device calls or sends the short message 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 in the list. If there is still no answer after going through the whole list, the calling procedure will be started all over. The device makes three rounds.

Key in the numbers. To enable a number, check the box which associates the number.

EMERGENCY PIN

Activating emergency pin

• To activate the emergency input pin, check the **Enabled** box (5a).

• The input pin is NOT in use when the check box is left blank. A signal of this pin is not detected at all.

Setting event state

Determine status for the emergency pin. The circuit can be set for **High** or **Low**. Click the arrow and highlight the desired option (5b).

A change in the status causes grounding of a pin. An event causing this can be, e.g. pressing the emergency switch.

After the change in status is registered, the device will start an emergency cycle and store the information in the **Event log**.

- For more information on Emergency cycle, see **EMERGENCY CYCLE (I/O MODEL ONLY) ON PAGE 52**.

- For more information on Event log, see **EVENT LOG SETTINGS ON PAGE 43**.

Defining notification delay

The device can be configured to allow some millseconds to pass until the event will be registered or interpreted as a cause for making an alarm.

Key in the time for allowed delay in millseconds (5c).

Digital output pins

ACTIVATING DIGITAL OUTPUT PIN

- To activate an output pin, check the **Activity** box (1).

- NOTE: The output pin is NOT in use when the check box is left blank. A signal of the pin is not detected at all.

SETTING EVENT STATE

Determine **Event state** for the digital output pin. The circuit can be set for **High** or **Low**. Click the arrow and highlight the desired option (2).

A change in the event state causes grounding of a pin. The change can be done by sending a specific MPTP message to the device. The desired action can be, e.g. swiching an electric sauna on remotely.

After the change is registered, the device responds to an event the way, it is configured in the **Event** data field (see below).

SELECTING EVENT

You can determine the way, the device responds to an event. Click the arrow on the **Event** data field and highlight the desired option (3).

- **No action**: The device does not send or log anything.

- **Send status message**: The device sends status message of the event as a reply to the requesting number.

- **Write in event log**: The device only writes down the event in the **Event log**.

- **Send and write**: The device sends status message of the event as a reply to the requesting number and writes down the event in the **Event log**.

Digital input pins

SETTINGS FOR DIGITAL INPUT PINS

Activating digital input pin

• To activate an input pin, check the **Activity** box (1).

• NOTE: The input pin is NOT in use when the check box is left blank. A signal of the pin is not detected at all.

Setting event state

Determine **Event state** for the digital input pin. The circuit can be set for **High**, **Low**, or **Both**. Click the arrow and highlight the desired option (2).

A change in the event state causes grounding of a pin. An event causing this can be, e.g. opening a door, or closing a door. The **Both** option means that the change in the event state is registered for both directions: E.g. the device will response whenever a door is opened AND closed.

After the change is registered, the device responds to an event the way, it is configured in the **Event** data field.

Selecting event

You can determine the way, the device responds to an event. Click the arrow on the **Event** data field and highlight the desired option (3).

• **No action**: The device does not send or log anything.

• **Send status message**: The device sends status message of the event to the corresponding status message number.

• **Write in event log**: The device only writes down the event in the **Event log**.

• **Send and write**: The device sends status message of the event to the corresponding status message number and writes down the event in the **Event log**.

NOTE: If the status message number is not configured (the data field is left blank), the status message will be sent to the service center number. For more information on configuring status messages and their destination numbers, see **STATUS MESSAGES FOR DIGITAL INPUT PINS ON PAGE 37**.

Defining notification delay

The device can be configured to allow some millseconds to pass until the event will be registered or interpreted as a cause for taking an action. In this case an action, such as sending status messages and/or logging information, would take place only in case a door is wide open for at least NN millseconds.

Key in the time for allowed delay (4,5) in millseconds. Delay can be set separately for **High** and **Low**, depending on which one of the event states is in use. If you have set the pin to register event states for **Both** directions, you can set values for both **High** and **Low**.

STATUS MESSAGES FOR DIGITAL INPUT PINS

A status message is a special short message, which includes the status message text, additional text information and the last known position (i.e. coordinates and some other MPTP information). If the current position information is not available, the previous coordinates will be sent instead.

Message text can contain information on opened or closed door etc.

Creating status messages

The status messages 1 - 8 are related to digital input pins 1 - 8.

E.g. if you have connected and wired the digital input pin4 to control locking the door, write down the corresponding information on the fourth row.

- Key in the desired status message text (6) and the phone number (8) to which this status message will be sent.

- Additional information (7) can - according to your choice - include details of some sort but the data field can be left blank, as well.

ALTERNATIVE FUNCTIONS FOR PIN9 ACTIVITY

If **Assistance call** feature is in use, the digital input pin9 is reserved for making assistance calls. If the feature is not in use, the pin9 works like any other digital input pin.

An assistance call can contain a voice call, an sms message, or both. The assistance (voice) call is an information call, which is made to specific, pre-configured number. The destination number can be a mobile phone number as well as any normal phone number. Along with the voice call or instead of it, the device may send its position as a short message.

Depending on selected usage, fill in the information:

- When the pin9 is used for sending **Status message**: Key in the status message text and the destination number. If the destination number is not defined, the status message will be sent to the service center number. Additional information is optional.

- When the pin9 is used for making **Assistance call**: Key in the assistance voice call and/or SMS numbers. Activate the number(s) by checking the corresponding **Call on**/**SMS on** box(es).

Analogue input pins

| Emergency settings | Digital output pins | Digital input pins | Analogue pins | Log settings |

Analogue input pins

Pin	Activity	Event state	Event	Delay for high (ms)	Delay for low (ms)
1	☑	Low	Write in event l	2	6
2	☑	High	Send status message	6	3
3	☑	Both	Send and write	6	6
4	☐	Low	No action	2	3

Pin	Low ref.value (%)	High ref.value (%)	Hysteresis for low limit (%)	Hysteresis for high limit (%)
1	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

Status messages for analogue input pins

Pin	Status messages	Additional information	Phone number
1	Low oil level		+3581234567
2	Overflow		+3587654321
3	Too hot/too cold		+3581357642
4			

SETTINGS FOR ANALOQUE INPUT PINS

Activating analogue input pin

- To activate an analogue input pin, check the **Activity** box (1).

- NOTE: The input pin is NOT in use when the check box is left blank. A signal of the pin is not detected at all.

Setting event state

Determine **Event state** for the analogue input pin. Event state can be set for **High**, **Low** and **Both**. Click the arrow and highlight the desired option (2).

A change in the event state causes grounding of a pin. An event causing this could be, e.g. a sudden increase/decrease in liquid level or a crucial change in temperature. The **Both** option means that the change in the event state is registered for both directions: E.g. when the liquid level goes above AND beyond allowed level.

After the change is registered, the device responds to an event the way, it is configured in the **Event** data field (see below).

Selecting event

You can determine the way, the device responds to an event. Click the arrow on the **Event** data field and highlight the desired option (3).

- **No action**: The device does not send or log anything.

- **Send status message**: The device sends status message of the event to the corresponding status message number.

- **Write in event log**: The device only writes down the event in the **Event log**.

- **Send and write**: The device sends status message of the event to the corresponding status message number and writes down the event in the **Event log**.

NOTE: If the status message number is not configured (the data field is left blank), the status message will be sent to the service center number. For more information on configuring status messages and their destination numbers, see .

Defining notification delay

The device can be configured to allow some millseconds to pass until the event will be registered or interpreted as a cause for taking an action. In this case an action, such as sending status messages and/or logging information, would take place only in case the temperature exceeds the allowed temperature and stays up for at least NN millseconds.

Key in the time for allowed delay (4,5) in millseconds. Delay can be set separately for **High** and **Low**, depending on which one of the event states is in use. If you have set the pin to register event states for **Both** directions, you can set values for both **High** and **Low**.

Setting reference values

Threshold values must be set separately for high and low (6).

- For the pins you have set event state **High**: Key in **High reference value** and **Hysteresis for High limits**.

- For the pins you have set event state **Low**: Key in **Low reference values** and **Hysteresis for Low limits**.

- For the pins you have set event state **Both**: Key in both **Low** and **High reference values** and **Hysteresis for Low** and **High limits**.

STATUS MESSAGES FOR ANALOGUE INPUT PINS

A status message is a special short message, which includes the status message text, additional text information and the last known position (i.e. coordinates and some other MPTP information). If the current position information is not available, the previous coordinates will be sent instead.

Message text can contain information on temperature or liquid level changes etc.

Creating status messages

The status messages 1 - 4 are related to analogue input pins 1 - 4.

E.g. if you have connected and wired the analogue input pin1 to control liquid level, write down the corresponding information on the first row.

- Key in the desired status message text (7) and the phone number (9) to which this status message will be sent.

- Additional information (8) can - according to your choice - include details of some sort but the data field can be left blank, as well.

ANALOG INPUT WITH EVENT STATE BOTH

PER CENT/
INPUT

HIGH REF.
VALUE

HYSTERESIS
FOR HIGH
VALUE

HYSTERESIS
FOR LOW
VALUE

LOW REF.
VALUE

ALERT LIMIT
HYSTERESIS

HYSTERESIS
ALERT LIMIT

TIME

ALERT ALERT   ALERT   ALERT   ALERT

EXAMPLE SETTINGS: LOW REFERENCE VALUE 20%
EVENT STATE: **BOTH**   HYSTERESIS FOR LOW VALUE 30%

HIGH REFERENCE VALUE 80%
HYSTERESIS FOR HIGH VALUE 70%
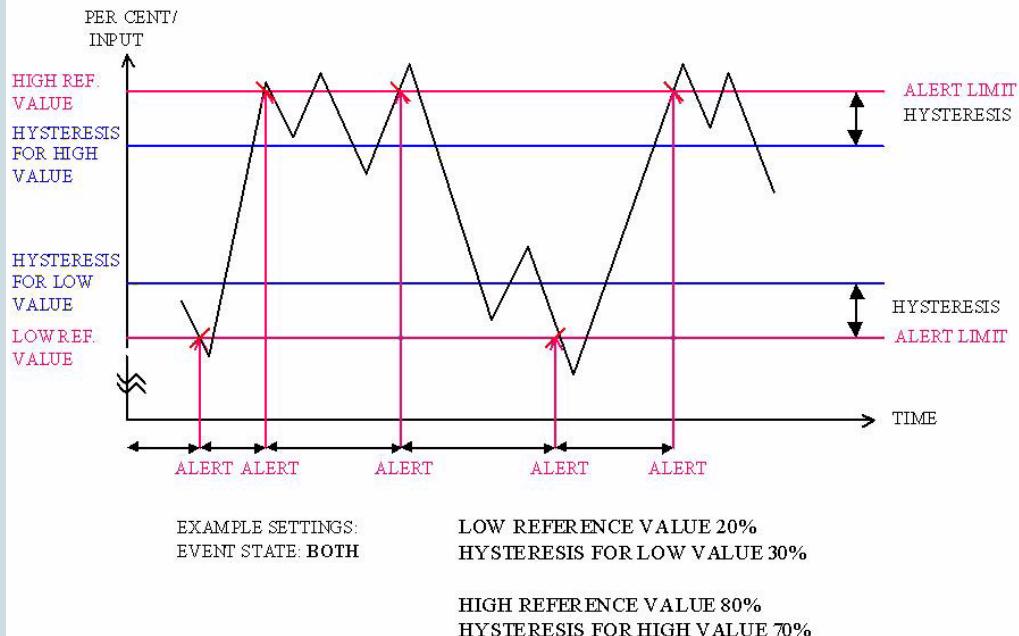
SAMPLE CASE 1:

Setting both High and Low reference values for the analog input pin.

In this sample case the idea is to keep, e.g. the liquid level of a container in between 20 - 80 % of the container´s capacity.

High (80%) and Low (20%) reference values are threshold values, i.e. alert limits, which must not be crossed. If the level goes clearly above High value or below Low value, the device will give alarm of the event.

Hysteresis defines tolerance, which is set to allow minor variations in liquid level. Only when the level crosses both borderlines (reference value and hysteresis), the device will give alarm of the event.

ANALOG INPUT WITH EVENT STATE BOTH

PER CENT/
INPUT

HYSTERESIS
FOR LOW
VALUE
LOW REF.
VALUE

HIGH REF.
VALUE
HYSTERESIS
FOR HIGH
VALUE

ALERT LIMIT
HYSTERESIS

HYSTERESIS
ALERT LIMIT

TIME

ALERT   ALERT   ALERT   ALERT   ALERT
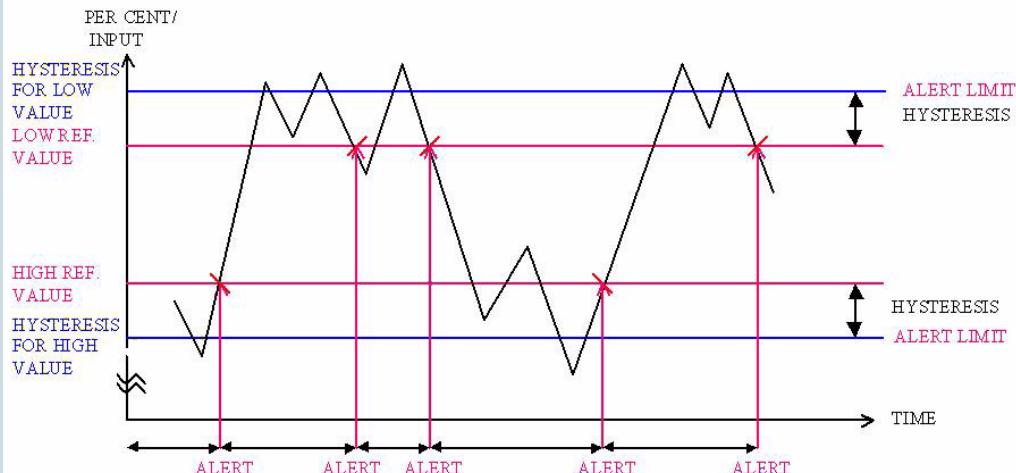
EXAMPLE SETTINGS: LOW REFERENCE VALUE 70%
EVENT STATE: BOTH   HYSTERESIS FOR LOW VALUE 80%

HIGH REFERENCE VALUE 30%
HYSTERESIS FOR HIGH VALUE 20%

SAMPLE CASE 2:

Setting both High and Low reference values for the analog input pin.

In this sample case the idea is to keep, e.g. the temperature either above or below of some value.

Low (70%) and High (30%) reference values are threshold values, i.e. alert limits, which must not be crossed. If the level goes clearly above High value, or below Low value, the device will give alarm of the event.

Hysteresis defines tolerance, which is set to allow minor variations in temperature. Only when the temperature crosses both borderlines (reference value and hysteresis), the device will give alarm of the event.

Log settings
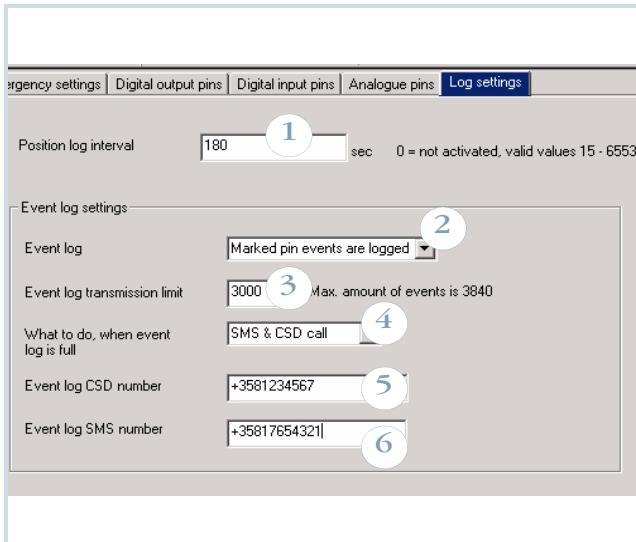
The device can be configured to collect incoming/outgoing data from the I/O pins. The device can also be configured to store plain positions at defined intervals.

Stored data may contain information on battery level, position, date and time, speed, direction, triggered event, event value, ID, type and so on.

POSITION LOG INTERVAL

With the position log interval setting, you can determine the device to store plain positions at pre-defined intervals. This way positions are calculated and logged more frequently.

Key in the interval in seconds (1). The interval can be set between 15 and 65536 seconds. If the value is set to zero, the position log interval is NOT in use.

EVENT LOG SETTINGS

Activating Event log

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

- **No pin events are logged**: The device does NOT gather any pin information in the **Event log**.

- **All pin events are logged**: The device will gather pin information from all active pins, despite of the options selected in the **Event** data fields.

- **Marked pin events are logged**: The device will gather pin information from a pin under these conditions: The **Activity** box is checked and **Event** data field is set to **Write in event log**, or **Send and write**.

Event log transmission limit

The limit (3) indicates, how much space is left for events in the **Event log.** The smaller the number you set in here, the more stuffed the log will be before the device sends the log or even informs of it.

NOTE: Event log limit value depends on Flash memory capacity of the device model, e.g. Normal 3840 or Extended 7936 pieces at maximum.

The limit also works as a trigger: When the limit is reached, the device will take action, e.g. send the log information as a CSD data call to the pre-configured CSD number. Action depends on configuration made in the **What to do, when event log is full** (see below).

What to do when event log is full

With this setting (4) you can define how to proceed when the log is about to reach limit. You can choose from these options:

• **No notification**: No action at all. The log does nothing else but preserve the already collected log information (if the **Event log** is in use). When the log is full, there is no space for new log information. The service center will NOT be informed of this at all.
However, it is still possible to recall (or clear) the log "over the air" by sending a specific MPTP message separately to the device.

• **CSD call**: When the log reaches the limit, the log information will be sent automatically as a CSD call to a pre-configured CSD number. There are three sending attempts.

• **SMS notification**: When the log reaches the limit, the device will send an SMS notification informing that the log is almost full. A new log information cannot be stored unless the old log has been separately cleared or recalled by the service center or an authorized number.

• **SMS & CSD call**: When the log reaches the limit, an SMS notification will be sent informing the service center of an incoming log transfer. Then the log information will be sent automatically as a CSD call to a pre-configured CSD number. There are three sending attempts.

CSD number

Key in the CSD data call number (5). The number is needed for transferring log from the device to the receiving mobile phone. The receiving phone must be connected to the computer.

NOTE: In order to use the CSD data connection, you need to insert a specific SIM card (equipped with data feature), in the receiving mobile phone. Data feature 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.

For more information on receiving the log, see .

SMS number

Key in the SMS number (6).

The number is needed in order to inform and warn the service center of some events and errors which may occur on the way.

TRANSFERRING OR CLEARING THE LOG

In order to be able to collect new log information, the old log information must be transferred or cleared. There are several ways to do it:

1. **A CSD call**: If the selected procedure option contains a CSD call, the old log will be cleared automatically after successful CSD call.

   - However, the CSD data call can fail for reasons, such as: CSD number is not set, establishing data call connection is failed, ongoing data call is disconnected, or an emergency call (or some other primary function) is activated during the data call transmission.

   - If the CSD call fails **after three attempts,** an SMS will be sent to the service center informing of reasons for failure.

2. **An MPTP message**: Clearing or transferring the log can also be done individually, by sending a specific MPTP message to the device, after which the device sends or deletes the log.

   - Proceed this way if the CSD call fails after three attempts, or the selected procedure option does not contain a CSD call at all.

3. **Benefon Configurator**: The Event log information can also be transferred or cleared locally, by using the Benefon Configurator software and BWTrackbox cable connection.

   - You may proceed this way if you can wait until the device "returns home".

For more information on entire process, see also .

WAYPOINT TRACKING

ID		Active	Name	Latitude	Longitude	Radius (m)	Al
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 direc
4		☑	neljäs	S 12° 34' 56.7"	W 123° 45' 57.8"	80	Both direc
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
		☐		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 message (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.

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 on 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 device EEPROM. 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 Trackbox 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 B: OPERATING THE TRACKBOX

INCOMING CALLS AND MESSAGES

The device can receive calls, messages and requests. With such messages you will make the device to activate functions, update settings, send positions or logged data and so on.

For incoming calls and messages

• a valid SIM card must be inserted and

• the device must be turned on.

Incoming calls

It is possible to listen in the Trackbox and its surroundings. The device answers an incoming call automatically after certain number of rings,

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

The **Audio** setting should be set to **Internal**, when using the device´s own built-in microphone. For more information, see AUDIO ON PAGE 19.

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 Trackbox is possible **only in case** the Trackbox is connected to an external device, such as a computer. For more information, see SHORT MESSAGES ON PAGE 13.

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.

If the **Authorization** setting is enabled, only messages from authorized numbers are processed, others are discarded at once. For more information, see AUTHORIZATION ON PAGE 27. **Authorized numbers** include service center and emergency center numbers and all the numbers stored in the list of authorized numbers. For more information, see AUTHORIZED NUMBERS ON PAGE 29.

In most cases, incoming MPTP messages are either remote configuration/activation messages or various types of position request messages.

REMOTE CONFIGURATION MESSAGE

The device may receive an MPTP message for the remote configuration. Remote configuration messages contain new or updated settings for e.g. emergency numbers, authorized numbers, AGPS-parameters, activity timer and GPS operating mode.

For more information on remote configuration, see the separate MPTP document.

AT commands

The device may receive an AT command via the configuration port. The port is located inside the device, in the lower part of the accessory module. For more information, see THE CONFIGURATION PORT ON PAGE 9.

AT commands are used when configuring settings with the Benefon Configurator, or some similar application. The AT commands can be used for carrying out similar things that are done via MPTP messages.

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

OUTGOING CALLS AND MESSAGES

Depending on configuration, the device may send some MPTP messages to the service center or authorized numbers. Such messages can be, e.g. power notifications or calculated positions.

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.

Power notifications

BATTERY STATUS MESSAGES

The device can be configured to inform the service center of various incidents on its battery status. This configuration can be done via the Benefon Configurator, or by sending a specific MPTP message to the device.

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.

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 the separate MPTP document.

Emergency cycle (I/O model only)

EMERGENCY MESSAGES AND CALLS

In order to send emergency messages, the device must have I/O functionality and a separate emergency switch. The emergency switch can also be some kind of light/movement/pressure indicator. Additionally the device must be configured correctly. For more information on emergency settings, see EMERGENCY SETTINGS ON PAGE 31.

As the emergency cycle takes place, the device is turned on automatically (if it is currently off).

The emergency message contains both GPS coordinates and GSM network measurement report.

The emergency message (including the latest position information available) is put through via the emergency input pin and I/O cable.

If an external audio (a combination of a microphone and speaker) is connected, a voice call to both ways is possible. Otherwise voice call means opening one-way audio: from the device to the emergency center number. In this case emergency center number can listen in the device and its surroundings.

EMERGENCY CYCLE CHECK LIST

Necessary settings

1. The device must be the I/O model, which includes the **I/O functionality**.

2. **SIM card** must be inserted in the device.

3. **Emergency pin wire must be connected**. For more information, see the Trackbox Installation Guide.

4. All required **settings** must be **configured** and **transferred** in the device in advance. Such settings are listed below.

   - Configuring settings can be done either by using the Benefon Configurator and transferring the settings to the device locally, via the data cable, OR by using the MPTP messages and transferring the settings remotely as an OTA (Over the Air) message.

5. **Emergency center numbers** must be set in the device. For more information, see EMERGENCY CENTER NUMBERS ON PAGE 32.

6. **The emergency pin** must be enabled. For more information, see ACTIVATING EMERGENCY PIN ON PAGE 33.

7. **Normal status for the emergency pin** must be defined. A change in the status works as a trigger for an emergency cycle to start. For more information, see SETTING EVENT STATE ON PAGE 33.

Voluntary settings

1. **Emergency message confirmation** can be set, if the control system supports it. For more information, see EMERGENCY CONFIRMATION ON PAGE 32.

   - If the emergency confirmation is activated, the device waits for an acknowledgement message. If it is not getting it in the pre-defined time, the device continues sending the emergency message until it is acknowledged. If the emergency center contains several emergency numbers, the device will after unsuccessful messaging send the message to the next number on the list.

2. **Emergency call connection waiting time** can be set. For more information, see EMERGENCY CALL CONNECTION WAITING TIME ON PAGE 32.

3. **Emergency call cycle mode** can be set. It depends on configuration whether the device first sends all the messages and then starts to make calls, or sends messages and makes calls in pairs. For more information, see EMERGENCY CALL CYCLE MODE ON PAGE 32.

4. **Response time** (a delay for starting an emergency cycle) can be set. For more information, see DEFINING NOTIFICATION DELAY ON PAGE 33.

Circumstances which may affect on emergency cycle

1. **Power supply**

   - Even when the device has continuous, fixed power supply, it is possible that the power source might run down or be disconnected for a period of time because of weather conditions or other circumstances (e.g. mischief). For such situations, ensure that there is adquately charge left in the battery. Battery should never be out-of-charge.

2. **Message transmission errors**

   - Deliveries of all messages, including MPTP messages, are fully handled by and in the responsibility of the GSM network operator and services can vary substantially.

3. **Shadow areas**

   - 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. Shadow areas may also occur momentarily, while moving from place to place, especially in tunnels, valleys, or under heavy tree cover.

THE EMERGENCY CYCLE WHEN SENDING SHORT MESSAGES AND MAKING CALLS

1. An emergency cycle can be initiated by pressing the separate emergency switch. The emergency switch can also be replaced by some kind of an indicator. The emergency cycle starts as the status of the emergency pin changes.

2. The device sends the latest position information along with the message. If current position coordinates are unavailable, previous coordinates will be sent instead.

3. The device calls the emergency center numbers, starting from the top of the list.

4. A voice call in progress.

Making assistance call

1. An assistance call starts as the status of the digital input pin9 changes.

2. The device sends the latest position information along with the message. If current position coordinates are unavailable, previeous coordinates will be sent instead.

3. The device makes assistance call according to configuration: It makes the information call and/or sends the message including last known coordinates.

NOTE: The device must be the I/O model, and the digital input pin9 must be connected and wired, and configured for assistance call usage.

For more information, see I/O SETTINGS ON PAGE 31 and separate Installation Guide.

Sending status messages

Status messages are related to digital and analoque input pins. A status message is sent, when the event state of a pin changes. The status message includes text, additional text and last known coordinates.

A status message is sent to corresponding, separately configured status message number or the service center number.

CHECK LIST FOR STATUS MESSAGES

Necessary settings

1. The device must be the I/O model, which includes the **I/O functionality**. Only the I/O model contains pin connectors. There can be several different status messages (one for each input pin).

2. **Wires for input pins must be connected**. For more information, see the Installation Guide.

3. **Status messages must be created and configured**. A status message includes the corresponding pin number, message text, additional text and the phone number (i.e. the destination number). For more information, see STATUS MESSAGES FOR DIGITAL INPUT PINS ON PAGE 37 and STATUS MESSAGES FOR ANALOGUE INPUT PINS ON PAGE 40.

4. **The needed pin connectors must be activated.** For more information, see ACTIVATING DIGITAL INPUT PIN ON PAGE 36 (for digital input pins), and ACTIVATING ANALOGUE INPUT PIN ON PAGE 39 (for analogue pins).

5. **Event status** for the needed pins must be defined. A change in the event state works as a trigger for sending a status message. For more information, see SETTING EVENT STATE ON PAGE 36 (for digital input pins) and SETTING EVENT STATE ON PAGE 39 (for analogue pins).

6. **Desired events** for the needed pins must be defined. In order to send status messages, **Event** data field must be set to **Send status report** or **Send and write**. For more information, see SELECTING EVENT ON PAGE 36 (for digital pins) and SELECTING EVENT ON PAGE 39 (for analogue pins).

7. **Reference values** for analogue pins must be defined. For more information, see SETTING REFERENCE VALUES ON PAGE 40.

Voluntary settings

1. **Notification delay can be** set. For more information, see DEFINING NOTIFICATION DELAY ON PAGE 36 (for digital input pins) and DEFINING NOTIFICATION DELAY ON PAGE 40 (for analogue pins).

2. **Event log can be set**. When the **Event log** is set to **All events are logged** or **Marked events are logged**, the information of the event will also be logged. For more information, see EVENT LOG SETTINGS ON PAGE 43.

Circumstances which may affect on sending status messages

1. **Power supply**

   - Even when the device includes a continuous, fixed power supply, it is possible the power source might run down or be disconnected for a period of time because of weather conditions or other circumstances (e.g.mischief). For such situations, ensure that there is adquately charge left in the battery. Battery should never be out-of-charge.

2. **Message transmission errors**

   - Deliveries of all messages, including MPTP messages, are fully handled by and in the responsibility of the GSM network operator and services can vary substantially.

3. **Shadow areas**

   - 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. Shadow areas may also occur momentarily, while moving from place to place, especially in tunnels or valleys.

Positioning features

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. According to configuration the position is calculated and sent to the service center. For more information on configuring activity timer, see .

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 (?LOC)** message to the device. Postponing might be necessary for e.g. completing all ongoing events before the power will be turned off.

All tracking messages, including ?LOC messages, override the **Interval** time set in the **Activity timer**. For more information on ?LOC messages, see below.

RESPONDING LOCATION REQUEST(?LOC)

The device may receive several different types of messages requesting location. Such messages can be, e.g. Location request (?LOC) messages or Location history request (?HIS).

For more information on how the device responds these kind of messages, see DEFAULT BEHAVIOUR FOR LOCATION REQUEST ON PAGE 25.

For more information on how to create location request messages, see the separate MPTP document.

RESPONDING LOCATION HISTORY REQUEST (?HIS)

The device responds the location history request by sending several old positions with desired intervals to the requesting number (service center number). If requested, the whole trace of the device can be unravelled afterwards.

Otherwise responding procedure works the same way as it does in a single location request (see above).

NETWORK POSITIONING SUPPORT

The device can be requested to send its current GSM network parameters at any time. Requesting number could 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.

Emergency center and service center 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.

Trace log

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: The log can be transferred from the device locally, by using the Benefon Configurator and data cable.

DOWNLOADING TRACE LOG

When the device returns home, connect it to the Benefon Configurator by data cable. The log is loaded from the device to the software the same way as other settings. For more information, see LOADING SETTINGS FROM THE TRACKBOX TO THE SOFTWARE ON PAGE 10.

When the Benefon Configurator loads the log from the device, the trace log file appears automatically in the display in readable text format. The Trace log icon is shown under the 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.

Saving log file

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

Deleting log file

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

NOTE: If you delete trace log from My Benefon node, the log is lost once and for all. So, make sure to store the log somewhere 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.

Recalling event log (I/O model only)

The device can be configured to store positions and I/O events registered by pins. Once the log is full, the device maintains already collected log information but does NOT store any new events unless the log is cleared or sent to the service center. For more information on logging events and positions, and transferring the log, see LOG SETTINGS ON PAGE 43.

You have two ways to recall logged information: Local transfer and remote transfer.

MOBILE PHONE NODE
Shows data recently downloaded from a device, e.g. Telematic settings, User settings and locally transferred Event log.

COMPUTER NODE
• Shows existing Benefon Configurator files just stored in the computer.
• Shows new (blank) Benefon Configurator files.
• Shows remotely transferred event log.
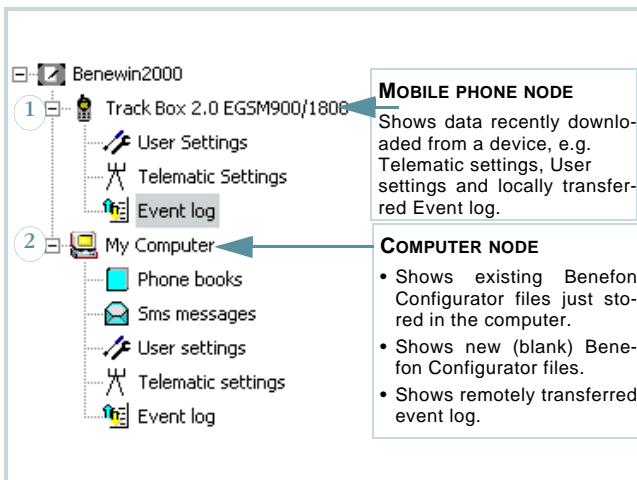
LOCAL TRANSFER

When the device returns home, it is connected to the Benefon Configurator by BWTrackbox cable. The log is loaded from the device to the software the same way as other settings. For more information, see LOADING SETTINGS FROM THE TRACKBOX TO THE SOFTWARE ON PAGE 10.

When the Benefon Configurator loads the log directly from the device, the event log file appears automatically in the display in readable text format. The Event log icon is shown under the mobile phone node (1) on the left, and by clicking the icon normally the actual event log file will be shown on the right.

IF THE DEVICE DOES NOT LOAD Event log ICON IN THE DISPLAY, MAKE SURE THAT

• The device contains logged information.
• The Load event log box is checked in Benefon Configurator. You can find it as follows: Open the Edit menu, select Settings and go to the Mobile phone startup tasks to check the box.

To load the log from the device later on in the same session, select Load event log from the Mobile menu.

REMOTE TRANSFER

The device sends the log to the service center remotely, as a CSD call, using Z-modem protocol. The CSD data call number and service center number must be configured in the Trackbox in advance. For more information, see SERVICE CENTER NUMBER ON PAGE 27 and CSD NUMBER ON PAGE 45.

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

In order to make the modem **answer automatically** incoming data calls, key in the command ats0=1 on the screen of the modem 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)

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 identifier is **.DAT**. Here is a sample case by using Hyperterminal, see below:

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). **Name** the connection -> **Ok**. Select **port** for the connection (e.g. COM1) -> **Ok**.

3. Set transfer speed to **19200 Bits/Second** ->**Ok**.

4. Open **Receive file..** from the **Transfer** menu. Click **Browse** and find the desired destination directory ->**Ok**. 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/BWTrackbox cable 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 to 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 REMOTELY SENT LOG FILE IN BENEFON CONFIGURATOR

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

1. Highlight the **Event log** icon shown on the left side of the screen, under **My computer** node (2).

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 binary.**DAT** Click **Open**.

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

PROCESSING EVENT LOG IN BENEFON CONFIGURATOR

Saving the log file

To save the event log in Benefon Configurator, choose **Save** or **Save as..** from the **File** menu. The event log file will be saved in readable text format (.log). Also the binary coded log file (.DAT), which was transferred as a CSD call, can be stored in readable text format (.log).

Deleting the log file

To delete the event log in Benefon Configurator, choose **Delete event log** from **Mobile** menu. NOTE: If you delete event log from mobile phone node, the log is lost once and for all. So, make sure the log is stored in some place else in case you need the log information afterwards.

PROCESSING EVENT LOG BY USING SOME OTHER APPLICATION

Event 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 application.

PART C: POWER MANAGEMENT

POWER SUPPLY

The device contains built-in charger plus one of the following batteries:

• Li-Ion Backup battery 650 mAh (BBL78S)

• Standard Li-Ion batteries:

  - 650 mAh (BBL77S)

  - 900 mAh (BBL77N)

  - 1200 mAh (BBL77P)

  - 1700 mAh (BBL77G)

In I/O model it is also possible to use Power adapter instead of batteries. Power adapter uses external power input directly.

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

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 e.g. by monitoring the indicating LEDs.

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

Never charge a standard battery at temperatures below 0°C. When using a backup battery, charging below 0°C is prevented automatically.

Charging time depends on what kind of a charger and battery you have in use.

Also note that humidity, temperature, age of the used battery and currently used devices (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 D: ACCESSORIES

BATTERIES, POWER SOURCES

CODE	PART
YO2301	Standard Li-Ion battery, 650 mAh
YO2413	Li-Ion Power battery, 1700 mAh
YO2611	Li-Ion Backup battery, 650 mAh
YO2610	Power adapter

EXTERNAL ANTENNAS

CODE	PART
ZE2408	External GPS antenna, Radiall
ZE3231	External GSM antenna, Drill mount (fixed)
ZE3230	External GSM antenna, Glass mount
ZE3232	External GSM antenna, Cottage mount
YA2414	Combi antenna,GPS+GSM (coming up)
YC2608	GPS antenna adapter (required for external GPS antenna)
YC2607	GSM antenna adapter (required for external GSM antenna)

BWTRACKBOX CABLES, DEMO TOOL

CODE	PART
ZE2306	Data cable APC70
ZE2406	Data/NMEA cable
ZE2602	Benefon Trackbox Demo tool

PART E: IMPORTANT SAFETY INFORMATION

DEVICE 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 battery or solid parts of the device by yourself or pierce holes in them.

- 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 wipe 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.

- Do not wet the device or battery or immerse either one in water. Even though the device is tough, it is not categorized to be used in damp conditions. Protection against dust and water can be considerably improved by assembling the device carefully, inserting the rubber seal to tighten battery and using o-ring seals with screws. If the device is frequently used in damp conditions, it is recommended to provide it with separate housing, which does not prevent antenna signals.

- External accessories, connections and attachements must be separately protected against dust and water. In case there are holes pierced in the device for some cable inlets, e.g. for the BWTrackbox cable, and such cables are not in place, the holes must be separately covered by some waterproof material.

- 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 assemble, connect and 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 authorized 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, charged and located in an area with adequate GSM network signal strength. A valid SIM card must be inserted in the device and the device must be configured to make emergency calls.

Connection is not quaranteed in all conditions. Rough terrain or large buildings may limit the operation of the device. Never completely rely upon the device for essential communications.

General safety notes

- **Traffic:** It is advisable to strictly adhere to all eventual European and national legislation and also honour other eventual safety recommendations when using the device while driving a vehicle. 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.

- **Air bags:** An air bag inflates with great force. Do not place objects, including either installed or portable wireless devices, in an 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:** The device is intended for use with the power supplies specified in PART C: POWER MANAGEMENT ON PAGE 62. Any other usage will invalidate any approval given to this apparatus and may be dangerous.

- **Loose batteries:** Make sure, the batteries and spare batteries are kept away from conductive materials, such as coins, jewelry, keys, and other metal objects, because a close contact of these materials and batteries can cause short-circuit, injury, burns or some other damage. Be especially careful when placing batteries inside your pocket, purse, or other container with metal objects.

- **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. Disconnect the power cord of any accessory by grasping and pulling the plug, not the cord.

- **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. Note that device´s own antenna must be disconnected when attaching an external GSM antenna to the device. The external GSM antenna adapter is a standard cable containing two separate connectors: SMA for the Track-box, and FME for the external antenna.

- **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.

FCC Statement

The device is designed for and intended to be used in fixed and mobile applications. Fixed means that the device is physically secured at one location and cannot be easily moved to another location. Mobile means that the device is designed to be used in other than fixed locations.

A minimum separation distance of at least 20 cm (8 inches) must be maintained between the antenna and persons for this device to satisfy the RF Exposure requirements of the FCC.

For fixed mount operation, the antenna co-location requirements of Section 1.1307 (b)(3) of the FCC rules must be satisfied. For fixed mount operation, the maximum gain of the antenna must not exceed 7 dBi. For mobile operation, the maximum gain of the antenna must not exceed 3 dBi.

WARNING: Use of this device in portable operations is not permitted.

Radio frequency (RF) energy

The device may cause TV or radio interference if used in close proximity to receiving equipment. The FCC can require you to stop using the device if such interference cannot be eliminated.

Vehicles using liquefied petroleum gas (such as propane or butane) must comply with the National Fire Protection Stan-

dard (NFPA-58). For a copy of this standard, contact the National Fire Protection Association, One Batterymarch Park, Quincy, MA 02269, Attn: Publication Sales Division.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications to your phone not expressly approved in this document could void your warranty for this equipment and void your authority to operate this equipment.

Potential RF energy interference areas

• **Aircrafts**: Turn the device off before boarding any aircraft and do not use the device while in the air, **also make sure that an automatic timer function will not activate the device during 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 the 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 or flammable 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.

• **Electronic systems in vehicles and other electronic devices**: Using the device may cause interference with electronic systems of a vehicle, e.g. electronic anti-skid braking systems, electronic cruise control systems, air bags etc. or electronic devices in a vehicle, e.g. a car stereo, tv set, an alarm system etc. if the equipment 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 the 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.

Ancillary equipment

Benefon cannot be responsible in any way for any ancillary equipment not provided by Benefon, which is attached to or used in connection with Trackbox or for the operation of Trackbox with any ancillary equipment and all such equipment is expressively excluded from the warranty of Trackbox. Because each system which Trackbox may use is unique, Benefon disclaims liability for range, coverage or operation of the system as a whole under this warranty.

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..............
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BENEFON dealer who sold the product..
....
....
IMEI code/serial number...

BENEFON

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