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AutoFon SE–Mayak

GSM/GPRS/GLONASS/GPS
Vehicle/Asset Tracker
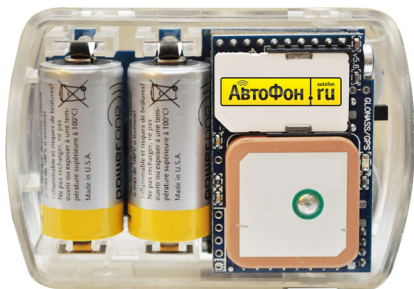
Preface

Thank you for purchasing **AutoFon SE-Mayak**. This manual shows how to operate the device smoothly and correctly. Make sure to read this manual carefully before using this product. Please note that specification and information are subject to change without prior notice in this manual.

Any changes will be integrated in the latest release.

Warning: The manufacturer reserves the right to change the design and software without notice, if it does not impair the quality and parameters.

Table of contents

INTRODUCTION. FUNCTIONS

This tracker is a new product based on GSM/GPRS network and GLONASS/GPS satellite positioning system, which set multiple functions as security, positioning, monitoring surveillance, emergency alarms and tracking device. It can track and monitor the remote target by SMS or internet.

This device can be used as
• Portable Emergency Bell for Elderly/Kids Care.
• Tracking/Recording of Business Trips.
• Vehicle Tracking, Fleet Management and Anti-theft Alarm.
• Searching stolen cars, motorcycles, bicycles etc.
• Asset Guarding and Tracking.
• Tracking of Pets and Animals.

What's included

• The device «Autofon SE-Mayak» - 1 pc.
• Lithium Battery CR123A - 2 pcs.
• User's Guide - 1 pc.
• Short plastic card guide - 1 pc.
• Package box - 1 pc.
• Adhesive tape - 1 pc.
• External power connector and cable - 1 pc. (option)
• Hermetic box with magnets - 1 pc. (option)

Getting started

GLONASS/GPS-antenna

Lithium Batteries
CR123A 3.0V

External power and
cable connector
(SE+ eddition)

LED

SOS-button

Microphone
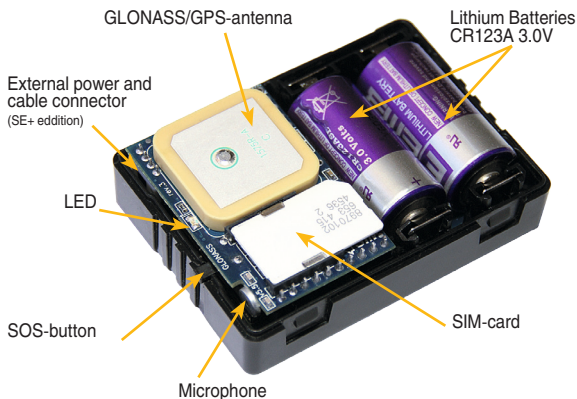
SIM-card

1. Open the device.
2. Turn the external power off and take the batteries out.
3. Insert SIM card according to the image above.

> **Make sure that there is no call transfer and call display is on and PIN code off. The SMS message must be in Text format, can't be identified for PDU format**

4. Insert the batteries according to the polarity markings. Then the status LED will blink twice to indicate that the device is ready to work.
5. If you would like to reset the device take both batteries out for at least 15 minutes.

AUTHORIZATION (SETTING ADMIN NUMBER)

Send SMS **1234,+your_cell_phone_number** to the device to set up an authorized number to get all messages from the tracker:

1234,+79037676045

1234 – default password,

+79037676045 – **will be set up as the authorized number. It should be in international number format.**

> **Wait a few minutes to receive an answer, so that the number is successfully authorized**
> **Note: The device ignores messages with incorrect password. If the device gets SMS with a correct password but wrong command, it sends an error message. Without an authorized number the device ignores all messages except the authorization command**

SETTING THE CURRENT DATE AND TIME

Send SMS:

1234,GMT=xx

xx is your timezone. Example: **1234,GMT=04** for Moscow, Russia

Date and time will be set by satellites. Therefore, the device has requires to be located in order to find them.

If it is not possible to set date and time this way, send an SMS command **1234,time=year+month+year,hours+minutes**

Example: **1234,time=08032013,1400** for 8th of March 2013 14:00.

SETTING THE MODE AND ACTIVATION INTERVAL

The often the device is in online mode, the faster it will respond to commands, but the batteries will also discharge quickly.
To set alarm time, interval, and mode; send the following command:

1234,Tx=daymonthyear,hoursminutes,interval,mode

(Example: **1234,T1=08032012,1400,30M,G**).

Possible values for interval: two-figure number+letter:

from 15 to 59 for **M** (minutes)

from 01 to 23 for **H** (hours)

from 01 to 30 for **D** (days)

The device can work in 4 modes or their combinations **F, G, S, A**. Read more on page 13

> **We recommend that you first set the alarm to wake up once a day with mode F (01D,F). When the device is waiting for commands and doesn't send anything, set a second alarm with 7 days interval; and g mode (07D,g) to control operability and to avoid blocking SIM card by operator due to inactivity. Thereby Autofon-Mayak will be active once a day and send a message with GPS coordinates once a week. For your convenience this will be default settings**

CHANGING YOUR PASSWORD

It is recommended to change the default password. A password can only contain 4 numbers from 0 to 9.

Send an SMS to the device with the following format:

1234,p=YYYY

where: **1234** is your old or default password, **YYYY** is the new password to be set.

> **Be sure to remember and keep the password safe. To restore original settings in case of losing the new password, you have to upload the device's software to the service center!**

Autofon-Mayak is now ready to work. check its efficiency and hide it in the protected object.

Software is available to make it easier to control, so that it is not necessary to memorize all commands. Mobile application **«AutoFon commander»** can be downloaded for free from Apple's Appstore and Google Play for free.

> **If you have any problems or questions regarding our the device, please contact us at info@autofon.ru, or visit our website at www.autofon.ru**

Installation and operation

After the initial settings are done, practice changing modes. Make sure that the device is performing your commands correctly. Try to memorize the most important commands.

Operation

After checking command execution and the device is set up to power saving mode F, we recommend that you use an activation interval of 12-24 hours. That will allow the batteries to work at

> **Decreasing activation interval reduces battery life. one set of batteries lasts about 500 full cycles searching for GLONASS/ GPS satellites and sending coordinates. During hibernation the device consumes battery power slightly**

At temperatures below -30° c the GsM-module cannot work because of the batteries. As soon as the environment's temperature increases, the connection is restored.

> **At every activity's session, the device will check on the status of the batteries. If the percentage is close to zero, a warning SMS-message will be sent to admin**

We recommend replacing both batteries once a year; before the winter, to ensure battery life in case of an emergency should occur. That is, when they reach at least half of their capacity!

When you send a command to the device, note that operators will usually hold undelivered sMs-messages for 24 hours. Therefore, if the range of your device is for more than 24 hours, the command must be sent again.

After command execution the device stays active for a specified time. This allows you to quickly change the wrong command and / or send another command.

Where to locate

Accurate GPS/GLONASS coordinates are guaranteed only if the

device is within sky-sight range. However, signal may weaken; in which case GPS/GLONASS coordinates can still be provided accurately.

What to do if the car has been stolen

If your car has been stolen call the police first.

1. Send an SMS to the device to change the interval of activity and set it to G mode:

password,T1=30M,G

Wait for the answer. do noT send other commands before getting an answer. Resend the message once a day if that SMS has not been delivered.

2. If the device has found GPs-coordinates find the location on Google Maps.

3. If the device has not found an exact location, but has sent LBS dates, the accuracy of this method isn't high. About 100-500 meters in cities and 1-30 km out of towns. Write **MCC, MNC, LAC, CID** at the following website: **lbs.autofon.ru** in order to find an approximate area of for locating the car.

4. After narrowing the searching area tell the police all the information you have gathered and go to possible location.

5. Sometimes car thieves hide cars in boxes or garages. In such cases, use the device's built-in microphone to find its location.

6. If it's not possible to find your car using the approximate location, extend the activity interval and wait until the device will be able to define GPS/GLONASS-coordinates. sooner or later car thieves will move the vehicle.

BASIC INSTRUCTIONS

Principle of operation

AutoFon SE-Mayak has a GSM/GPRS-modem, GPS/GLONASS-receiver, microprocessor, and an independent power source. Autonomy and the small size of this device, allows it to be hidden into the most hard to find and unexpected places. It is difficult to detect the device with GSM-signal detectors because it is in hibernation most of the time.

During interval mode the device is active only for a few minutes.

When the device is offline, internal batteries allow **AutoFon SE-Mayak** to operate in interval mode by activating it for a few minutes. In this mode the device consumes little battery power.

Interval mode does not allow instantaneous communication with the device – it will execute commands during the next online session. The communication interval can be set from 15 minutes to 30 days.

If this mode does not satisfy requirements **AutoFon SE-Mayak** can also work in active mode and respond immediately, the battery life in this case is lasts up to 10 days. When choosing this mode, we recommend connecting to an external power source. Keep in mind that during active mode the device can be easily detected by GSM scanners.

To set the mode use your cell phone by sending commands in the form of SMS-messages. The message should include password and command. (read more on page 14). According to the parameters in the message activation interval is thus set.

AutoFon SE-Mayak determines its position by GPS and sends it to the owner via SMS or to the monitoring server in GPRS packets. Apart from coordinates the device also sends LBS information. This information can help to determine the location without satellites' connectivity. Furthermore, SMS displays the current speed and the direction of movement. service information in the message includes date and time of activation, battery charge, temperature inside the device, mode, the number of satellites being found, GSM signal strength level, the time it

took to determine the coordinates, the number of sent SMS-messages, and other useful information.

AutoFon SE-Mayak has a microphone that allows to put room (about 5 meters) around the device with an SMS-command that tells the device to make an incoming call. **AutoFon SE-Mayak** can optionally be connected to a car alarm system. If the sensor activates, even if the device is in sleeping mode, admin receives an SMS-report to which coordinates can be included. It is also possible to send an SMS to activate the external control system, such as the engine's start, stop system, front lights, etc.

The device sends a warning SMS-message when turning off the external power.

AutoFon SE-Mayak can change mode depending on external power or moving.

The device checks for battery status and if necessary, reports their discharge. If the message was not sent the device will attempt again.

AutoFon SE-Mayak has a digital accelerometer. That is how movement, turn, shock, fall, crash factors can be detected and the device will inform by SMS-message and / or change to active mode.

The device control is possible from any mobile phone by sending SMS-messages with the correct password.

Specifications

• Built-in GSM / GPRS-modem 900/1800 MHz with integrated PCB GSM-antenna.

• Built-in GPS/GLONASS receiver with inner patch antenna 25x25 mm, receiving signals from GPS/GLONASS satellites, including reflections. **Online Assisted GPS (A-GPS)** technology is supported. This function requires GPRS connection to the navigation data server.

• GPS coordinate accuracy is up to 5 m (ideal conditions), 5-20 m (typical), up to 300 m (weak or reflection signal).

• Multi LBS GSM technology positioning accuracy is 100-500

meters within the city, 0,5 - 30 km outside the city. The device sends data to four nearest GsM base station (MCC, MNC, LAC, CID parameters).

• Two lithium batteries CR123A 1500mAh 3.0V Temperature range -40 to +70 ° C.

• External power supply +8 … 30 V through pcb connector.

• 1 universal input alarm (to ground).

• 1 SOS-button.

• External power failure control, sending warning SMS-message, even if the device is in hibernation.

• 1 universal output control, 200 mA.

• Control by SMS-messages.

• Sending SMS-messages in Russian or English language and / or GPRS-package to monitor server.

• Authorization SMS-commands: setting a four-digit password. Default password: 1234.

• Operation Temperature -35 … +70 ° C.

• Current in hibernation is less than 15 mA, hibernation with movement control - 25 mA, online - 3 mA, searching GPS/GLONASS satellites - 50 mA, sending GPRS-package and audio control- 500 mA.

• Dimensions 72x50x21 mm, weight 110 g.

• User-configurable activation interval is 15-59 min / 1-23 hours / 1-30 days, online mode.

• Real-time clock and calendar. Inaccuracy: 0.5%.

• The number of cycles of battery life at a temperature of 20° C searching satellites and sending SMS is no less than 500 cycles. Without GPS coordinates definition and sending messages up to 1000 cycles.

• GPRS: open protocol with IMEI-number authentication. IP-address and port of the monitoring server, GPRS-channel settings and connection interval are programmed to the device.

• The internal memory capacity for unsent GPRS-packets is 98000 coordinate points.

• Control via free mobile application **«AutoFon Commander»** for iOs and Android.

• Control via free web service **ksa.autofon.ru**

• Free monitoring and control server **«AutoFon KSA»**

Main modes

G - GPS and GSM-coordinates detection

The device determines location by satellites and sends a message with the exact coordinates in a format specified by the configuration command: SETUP= (parameter 8, page 20). Coordinates are either in the form of numerical data or hyperlinks to different map servers **(Google Maps and Yandex.Maps)**. Additional parameters (date and time positioning, speed, etc.) can also be delivered within the message.

S - GSM-coordinates detection mode

The device sends an SMS-message with IDs of four nearby GSM base stations, level of signal strength from the current GSM base station, the device's temperature, battery charge and operating mode. This mode is used when it is not necessary to determine exact coordinates.

F - Standby mode

The most economical operation mode. The device is activated by set alarm time, turns the GSM-module on and waits SMS-messages. After receiving the command, the device executes it. If there is no command, the device starts hibernating until the next session.

> **To avoid SIM card blocking due to long inactivity, note that it is impossible to set «Alarm T2» in F mode!**

A - audio control mode

Within each activation set in alarms «Alarm Clock T1/T2», the device will call admin and turn built-in microphone on to bug the area around. Maximal audio monitoring time can be set in command SETUP= (parameter 5 p. 21). There will be three attempts (with an interval of 1 minute between each of them).

After finishing, the device will stay online for 5 more minutes to wait for an SMS-command or a call.

The device can operate either in one mode or in a combination of several (up to 5) modes with one «alarm clock» each.

Command control the device

The device control is performed by sending SMS-commands to the SIM card installed in it. **At the beginning of each SMS-message the password should be typed (4 digits and separator - «comma»).** It is not case sensitive. Additional symbols including «Space» aren't allowed. SMS-messages with an incorrect password or non-Latin letters are not responded.

If several SMS-messages are sent, **AutoFon SE-Mayak** will only pay attention to the last one. If you want to send several messages, do it consistently, one by one, waiting for an SMS-confirmation for each command. After receiving and executing commands, the device stays online for the time set in setup, waiting for the next possible command.

If it was not possible for **AutoFon SE-Mayak** to sent an SMS (probable causes being no GSM network, no money on the SIM card), it will make additional attempts and then it will return to set mode and send these SMS-messages when possible.

> **All parameters and settings are stored in nonvolatile memory, thus they do not change because of the replacement of batteries or SIM-card.**

Type your four-digit password instead of the word **«password»**

(password,sleep)
Setting interval mode

1234,sleep

Autofon SE-Mayak v6.1d
Bat.: 6.16 V (82%) T: +34 °C
Mode: sleep
sms#1

With this SMS the device is set to interval mode. It will turn to online mode (at the time set in the alarm clock) or because of sensor activation; such as moving, pressing the SOS-button, activating an external alarm input, etc. The rest of the time it hibernates.

(password,online)
Setting active mode

1234,online

Autofon SE-Mayak v6.1d
Bat.: 6.16 V (82%) T: +34 °C
Mode: online
sms#1

With this SMS the device is set to active mode, the device is always online. Commands are also executed in real time. Batteries in this mode last up to 10 days if GPRS monitoring is off and up to 48 hours if GPRS monitoring is enabled.

(password,eng) or (password,rus)
Choosing a language for SMS

1234,eng

AutoFon SE-Mayak v6.1a
04-03-2012 13:45:04
1: +79037676045
IMEI: 359231039333995
SETUP=1125561721
011119111000000
Output channel on.
Bat: 6.16 V (82%) T: +34 °C
Mode: sleep
sms#11

The letters limit in english exceed the limit in russian language twice, therefore SMS-messages in russian can be more expensive.

(password,GMT=xx)
Setting the Current Date and Time from satelites

1234,gmt=04

Autofon SE-Mayak v6.1d
04-03-2012 13:45:04
Bat.: 6.16 V (82%) T: +34 °C

1234,GMT=xx

xx x is your timezone from 00 till 14. 1234,GMT=04 for Moscow, Russia. Date and time will be set from satellites signals. Therefore, the device has to be located in order to find them.

If it is not possible to set date and time this way, you can also use command **TIME=**

(password,TIME=ddmmyy,hhxx)
Setting current date and time

1234,time=02012012,1405

Autofon SE-Mayak v6.1d
02-12-2012 14:05:04
Bat.: 6.16 V (82%) T: +34 °C

To set or change the current date and time send the following command:

password,time=ddmmyyyy,hhmm

dd (day) in the range of 01…31; **mm (month)** in the range of 01…12; **yyyy (year)** in the range of 2010…2100; **hh (hour)** in the range of 00…23; **xx (minutes)** in the range of 00…59.

Default setting: time=**01012012,1200**.

Setting the date, time, and mode «Alarm T1/T2»
(password,Tn=ddmmyy,hhxx,interval,mode)

1234,t1=05032012,1300,15m,f

Autofon SE-Mayak v6.1d
T1: 05-03-2012 12:00,15M,F
T2: 12-03-2012 15:30,07D,G
Bat.: 6.16 V (82%) T: +34 °C

To set or change the date and time to any of the alarms T1/T2 send the following command:

password,Tn=ddmmyyyy,hhmm,interval,mode

n - 1 or 2 - number of the alarm, **dd (day)** in the range of 01…31; **mm (month)** - 01…12; **yyyy (year)** - 2012…2100; **hh (hour)** - 00…23; **xx (minutes)** - 00…59.

The possible values (two digits + one letter) for intervals are:

• 15 to 59 for the letter **M** (minutes),

• 01 to 23 for the letter **H** (hours),

• 01 to 30 for the letter **D** (days).

Mode - the letters **F, S, G, A or their combination**

Time and date correction is checked. The time of installation - time of reading this SMS by the device. When the alarm time of the device expires, it goes online and starts the algorithm mode set in the alarm clock.

Each time the device puts alarm clock forward on set interval.

Alarms are equal, but it's not allowed to set **F** mode on «T2».

Multiple modes of operation executed in appearing order.

Default settings: **T1=02012012,1200,01D,F**
T2=02012012,1200,07D,G

Changing «Alarm T1/T2» mode and / or intervals only
(password,Tn=mode)
(password,Tn=interval)
(password,Tn=interval,mode)

> **1234,t1=s**

> **Autofon SE-Mayak v6.1d**
> **T1: 05-03-2012 12:00,15M,S**
> **T2: 12-03-2012 15:30,07D,G**
> **Bat.: 6.16 V (82%) T: +34 °C**

To change **Alarm T1/T2** operation mode only, send the command:

password,Tn=mode

n - 1 or 2 - alarm number, **mode** - the letter **F, S, G, A or their combination**.

Similarly, it is possible to change the activation interval for each alarm with the following command: **password,Tn=interval**, To change interval and mode at the same time use: **password,Tn=interval,mode**. Command parameters are identical to the settings above.

(password,G)
Single GPS-coordinates definition request

> **1234,G**

> **Autofon SE-Mayak v6.1d**
> **04-03-2012 13:45:04**
> **Command ok. Wait**
> **Bat.: 6.16 V (82%) T: +34 °C**
> **Mode: sleep**
> **sms#11**

> **Autofon SE-Mayak v6.1d**
> **04-03-2012 13:45:04**
> **Sat.: 4 at 47s.**
> **N55 52.7213**
> **E037 36.1908**
> **Speed: 73 km/h**
> **Altitude: 177 m**
> **Accur.: 10 m**
> **Bat.: 6.16 V (82%) T: +34 °C**
> **Mode: sleep**
> **sms#11**

The device sends a message with GPS coordinates in the format specified by **parameter № 8 in SETUP=xxx…xxx**. Depending on the settings, coordinates are displayed in one of the multiple standard formats or as a hyperlink indicating the location. The coordinates can be accompanied by date and time of positioning, speed and direction of movement, current GSM base station identifiers, etc. If the GPS-satellites were not found, the device sends an SMS with the location determined by base stations on the GSM (LBS-location method).

(password,S)
Single GSM-coordinates definition request (Multi LBS)

1234,S

```
Autofon SE-Mayak v6.1d
01-01-2012 12:05:00
GSM -52dB LBS:
MCC=250
MNC=01
LAC: 9472 9472 9472 9472
CID: 893C 8940 1725 1727
T1: 02-01-2012 12:00 01D,S
T2: 02-01-2012 12:00,07D,G
Bat.:.5.85 V.(100%) T: +25 °C
Mode: sleep
sms# 3
```

The device sends an SMS-message with the identifiers of the current and the next three GSM-base stations, temperature, battery charge and operation mode. This data allows to specify location. The parameter indicating GSM-signal level is also sent in the message. The smaller the value, the better the reception. In s mode, SMS-messages in english allows for 160 symbols.

(password,A)
Single turning audio monitoring mode

1234,A

RING

The device responds to the SMS with a call and turns the built-in microphone on. Maximum session time is set in **parameter № 5 in SETUP=xxx**, 3 attempts. After finishing, the device will stay online for 5 more minutes waiting for an SMS-command or a call.

It is also possible to use this function by setting the admin's phone number and calling the device during active mode.

(password,name=####)
Changing the name of the device

1234,name=OpelAstra

```
OpelAstra SE-6.1a
PASS: 5678
Bat.: 6.16 V (82%) T: +34 °C
```

This name will be shown instead of default «AutoFon SE-Mayak». Maximum 23 digits. The device type and software version will be added. For example: «SE-6.1d».

(password,?)
Checking the status, settings and operation modes

```
1234,?
```

```
Autofon SE-Mayak v6.1d
04-03-2012 13:45:04
PASS: 1234
IMEI: 359231039333995
1: +79037676045
SETUP=1025561721
011119111000000
I1=internet.mts.ru
I2=176.9.114.139.20102
I3=030
T1: 05-03-2012 12:00,01D,F
T2: 12-03-2012 15:30,07D,G
Sensor=1/1 (move)
Ext. power: off
Output channel on.
Bat.: 6.16 V (82%) T: +34 °C
Mode: sleep
sms#11
```

As a response to this command the device sends an SMS-message with full information about options except the password.

With this command, the IMEI number and current admin's number can be found.

(password,SETUP=параметр 1... параметр 25)
Changing general settings

```
1234,setup=1005511132122
123212342231
```

```
Autofon SE-Mayak v6.1d
SETUP=1005511132122
123212342231
Bat.: 6.16 V (82%) T: +34 °C
```

If there is no need to change all or any options, simply put an asterisk symbol instead. For example, to change the sensitivity of the accelerometer to the maximum, send SMS-command:

1234,setup=***************9*********

Parameter 1 (interval / active mode):

0 – interval mode (sleep)

1 – active mode (online).

Default – 0.

Parameter 2 (russian / english SMS language):

0 – Russian,

1 – English.

Default – 0.

Parameter 3 (SMS waiting time (in minutes)):

<div align="center">

2 to **9**

</div>

SMS waiting time after GSM-module registration
Default – 2.

Parameter 4 (Delay before starting hibernation (in minutes)):

<div align="center">

2 to **9**

</div>

SMS waiting time after all alarms and commands are done
Default – 5.

Parameter 5 (Audio control limit time (in minutes)):

<div align="center">

0 to **9**

</div>

Maximal audio surveillance duration. For unlimited time set zero «0».

Default – 5.

Parameter 6 (Maximal time to search satellites (in minutes):

<div align="center">

1 to **9**

</div>

Default – 6.

Parameter 7 - not used in this version

Параметр 8 (SMS type mode G)

changing structure and type of information in SMS-message mode G

```
Autofon SE-Mayak v6.1d
01.01.2012 12:06
Sat: 8 at 94s.
E037.602963
N55.878730
http://m.maps.yandex.ru/?l=ma
ps&ll=037.602963,55.878730&p
t=037.602963,55.878730&z=13
Speed:0km/h
Accur.:14m
T1: 02-01-2012 12:00, 01D,F
T2: 02-01-2012 12:00, 07D,G
Sensor=0/1 (off)
Bat:6.26V(100%) T:+27C
Mode:online
sms#1
```

0 – basic information + GPS-data in digital form in degrees + hyperlink to Yandex.Maps **(default)**;

```
Autofon SE-Mayak v6.1d
01.01.2012 12:08
Sat: 11 at 17s
E037.603003
N55.878830
http://m.maps.yandex.ru/?l=
maps&ll=037.603003,55.878830&
pt=037.603003,55.878830&z=13
http://map.google.ru/m?q=
loc:55.878830,037.603003
Speed:0km/h
Altitude:170m
HDOP:0.8VDOP:1.3
GSM -62dB
MCC: 250 MNC: 001
LAC: 18EC CID: 5069
T1: 02-01-2012 12:00, 01D,F
T2: 02-01-2012 12:00, 07D,G
Sensor=0/1 (off)
Ext.power:on
Bat:6.26V(100%) T:+29C
Mode:online
sms#1
```

1 – extended coordinate information version and the device's status.

```
Autofon SE-Mayak v6.1d
01.01.2012 12:12
Sat: 9 at 6s.
N55 52.7312
E037 36.1914
Speed:0km/h
Altitude:215m
Accur.:8m
T1: 02-01-2012 12:00, 01D,F
T2: 02-01-2012 12:00, 07D,G
Sensor=0/1 (off)
Ext.power:on
Bat:6.26V(100%) T:+29C
Mode:online
sms#2
```

2 – GPS data in digital form in degrees without hyperlinks.

```
Autofon SE-Mayak v6.1d
01.01.2012 12:15
Sat: 10 at 16s.
http://m.maps.yandex.ru/?l=maps
&ll=037.602960,55.878928&pt=03
7.602960,55.878928&z=13
http://map.autofon.ru/?gl=56j862
17001362754001011212150201121
20001DF0000020112120007DG0
0007D1B25563344504561E4A080
23A1870034F47BD091300B20000
1FFA0118EC5069000D
Accur.:9m
Sensor=0/1 (off)
Bat:6.26V(100%) T:+30C
Mode:online
sms#3
```

3 – Yandex-link coordinates + link to map.autofon.ru with expanded information and location on GSM base stations information in case satellites are not found.

```
http://m.maps.yandex.ru/?l=
-maps&ll=037.603066,55.878
755&pt=037.603066,55.87875
5&z=13
Speed:0km/h
Accur:7m
Bat:6.26v(100%) T:+30C
sms#4
```

4 – Yandex-link + minimum device status information. SMS is always in english and charged as one SMS. If no satellites were found a link to map.autofon.ru will be sent, with LBS coordinates and complete deciphered status information;

```
AutoFon SE-Mayak v6.1a
Sat: 5 at 7s.
http://map.google.ru/m?q=loc:
55.878761,037.602946
Speed:0km/h
Accur:13m
Bat:6.26V(100%) T:+30C
sms#5
```

5 – Google Maps-link + minimum information. SMS is always in english and is charged as one SMS. Link to map.autofon.ru with expanded information and location on GSM base stations in case satellites were not found.

Most modern smart phones open these links in «Maps» applications which increases the convenience of viewing and download speeds.

```
Autofon SE-Mayak v6.1d
01.01.2012 12:24
Sat: 12 at 16s.
E037.603078
N55.878776
55 52'43.59"N
37 36'11.8"E
Speed:0km/h
Altitude:168m
HDOP:0.8VDOP:1.2
GSM -62dB
MCC: 250 MNC: 001
LAC: 18EC CID: 5069
T1: 02-01-2012 12:00, 01D,F
T2: 02-01-2012 12:00, 07D,G
Sensor=0/1 (off)
Ext.power:on
Bat:6.26V(100%) T:+30C
Mode:online
sms#6
```

6 – GPS-data in digital form «degrees - minutes - seconds + LBS information + current settings and the device status + altitude + HDOP and VDOP accuracy.

```
Autofon SE-Mayak v6.1d
Sat: 12 at 17s.
E037.602973
N55.878838
Speed:0km/h
Altitude:178m
Accur.:9m
Bat:6.26V(100%) T:+30C
sms#7
```

7 – condensed coordinates information in degrees + speed, course, accuracy, the number of found satellites and positioning time, battery power information, and number of SMS. All these sent through only one SMS, billed to the operator in english mode. If no satellites are found, the nearest GSM base station Id is used to determine coordinates by LBS.

8 – reserved;

```
http://map.autofon.ru/?gl=56
j862170013627540010112123
1020112120001DF00000201
12120007DG00007D1F25569
344504562049070023A18E60
34F46F3090E00D000001FFA
0118EC5069001F
```

9 – short map.autofon.ru link with complete status information and the current location.

Parameter 9 (password protection):

0 to **9**

Wrong password reaction:

0 –no reaction,

1–9 – number of consecutive sMs with the wrong password and the correct content.

Default – 3.

Parameter 10 (low battery):

Low battery SMS-notification,

0 – no notification

1 – SMS-message to the admin's number.

Default – 1.

Parameter 11 (external power) (SE+ eddition only):

0 – no reaction,

1 – Alarm by power on,

2 – Alarm by power off,

3 – Alarm by power on and off,

4 – Active mode by power on,

5 – Active mode by power on + inform message by power on,

6 – Active mode by power on + inform message by power off,

7 – Active mode by power on + inform message by power on and off

Default – 4.

Parameter 12 (external input mode) (SE+ eddition only):

0 – no reaction,

1 – Alarm by activation (to ground),

2 – Active mode by activaton,

3 – – Active mode by activation + inform message

Default – 1.

Parameter 13 (SOS-button mode):

0 – no reaction,

1 – Alarm by pressing,

2 – Active mode by pressing,

3 – Active mode by pressing + alarm message.

Default – 1.

Parameter 14 (accelerometer mode):

    0 – off,

    1 – Alarm at the beginning of movement,

    2 – – coordinate dispersion rejection mode (so-called «parking stars»),

    3 – Alarm at the beginning of movement + coordinate dispersion rejection mode,

    4 – Turn detection,

    5 – Shock detection,

    6 – Crash detection

    7 – Fall detection

    Detailed description of this parameter algorithm can be found

    in «using the built-in accelerometer» (p. 29)

    Default – 1.

Parameter 15 (the device alarm reaction):

    1 – Sending SMS-messages on factors (i.e. Turn, shock, crash etc.) set in parameter number 14,

    2 – Active mode on factors set in parameter number 14,

    3 – Active mode on factors set in parameter number 14 + SMS notification.

    Default – 1.

Parameter 16 (accelerometer sensitivity)

    1 (lowest sensitivity) to **9** (highest sensitivity)

    Default – 5.

Parameter 17 (movement control reactivation time)

    от **0** to **9**

    complete rest time to start movement detection, only if parameter 14 is set to 1 or 3 (x 10 minutes).

    Default – 6 (60 minutes).

Parameter 18 (alarm coordinates):

    sending SMS with coordinates after any alarm

    0 – off,

1 – same as G-request.

Default – 0.

Parameter 19 («black box» for unsent GPRS-package):

0 – off,

1 – on (if isn't possible to send GPRS-package to monitoring server coordinates are stored in flash-memory and sent to server when possible).

Default – 1.

Parameter 20 (sending GPRS-package with GPS module off):

0 - GPS module on,

1 - GPS module off

Default - 0.

Parameters 21-25 - reserved

(password,p=####)
Changing the admin's number

1234,p=5678

Autofon SE-Mayak v6.1d
PASS: 5678
Bat.: 6.16 V (82%) T: +34 °C

Receiving this SMS-command next time it activates the device replaces the old password (4 digits) to the new (4 digits) password. For example: 1234,p=5678, where 1234 is old password, and 5678 - the new one. be sure keep the new password in

mind, you have to upload the software in service center to restore the original setting in case of losing the new password!

(password,+79037676045)
Changing the admin's number

1234,+79991112233

Autofon SE-Mayak v6.1d
1: +79991112233
Bat.: 6.16 V (82%) T: +34 °C

When this command is received, the device will replace the current phone number for notifications to a new one. The new number must be entered in international format, starting with a «+» and consisting of 10-13 digits.

AutoFon SE-Mayak will also send SMS-message to old admin's number to inform.

(password,++79992223344), (password,++0)
Recording, editing and deleting phone number for emergency notifications.

> **1234,++79991234567**

> **Autofon SE-Mayak v6.1d**
> **1: +79037676045**
> **2: +79991234567**
> **Bat.: 6.16 V (82%) T: +34 °C**

When this command is received, the device will be sent double message to this number emergency SMS-message such as turn, crash or sos-button pressing. The number must be in an international format, starting with a «+» and consisting

of 10-13 digits.

(password,M=xxxxxxx)
Balance and other USSD-requests

> **1234,M=*100#**

> **Autofon SE-Mayak v6.1d**
> **Balance 51 Rub**
> **sms#39**

Requesting account balance information. Check with SIM card service provider by using a balance command format. It is a request like ***100#** or ***102#**

Example: **1234, M=*100#**

During the next communication session the device will send request to the operator, receive an answer and send it to admin. If the operator adds commercial text to the balance message, this text will be transmitted as well. If there is no response from the operator (after 3 attempts), the device sends an sMs error message.

We recommended to activate a service, in which admin allows to receive a notification of the current sIM card balance when it is close to zero. In addition, it will be useful to enable access to the mobile operator online account before installing sIM card into the device.

(password,k=xxxx) (password,k+) (password,k-)

Enable / disable the output channel (SE+ eddition only)

> 1234,k=1200

> Autofon SE-Mayak v6.1d
> **Output channel on.**
> **Bat: 5,85 V (100%) T:+25 °C**

Receiving SMS **password,k=xxxx** x the devices will turn output channel on at set time, where xxxx - time in seconds, from 0001 to 9999.

Also, you can turn the channel on for unlimited time with command **password,k+**

To turn output channel off send an SMS-message: **password,k-**

Using the built-in accelerometer

Built-in three-axis accelerometer allows monitoring the protected object, whether it is in motion, identify turning , shocking, crashing and dropping. AutoFon S-Mayak is not only used for locating stolen cars, the device makes it possible to respond immediately. Detection is performed in all modes, including hibernation. In addition, it is possible to receive current location right after every sensor alarm - **parameter 18** (refer to **SETUP=** on page 25)

Accelerometer control command format:

password,mems=x

x = 0 sensor is switched off, no reaction;

x = 1 sensor detects beginning of the movement after parking. Minimum movement duration to be detected is 4 seconds. Parking duration can be adjusted from 10 to 90 minutes in **SETUP=parameter 17**, after that time the device will send SMS-messages about movement. Default: 60 minutes.

x = 2 to suppress coordinates scatter during parking in GPRS-monitoring (so-called «parking stars»). It is only used during sending data to the monitoring server via GPRS;

x = 3 sensor detects beginning of the movement after a long stay + suppresses coordinates scatter during parking in GPRS-monitoring («parking stars»). This algorithm combines x = 1 and x = 2. Settings are similar to x = 1;

x = 4 sensor detects turning. Turn in this case - is a one-time change in the device's vertical orientation at angle more than 90 degrees. For accurate detection place the device parallel or perpendicular to the ground level. Intermediate axes sensor positions orientation can cause a false alarm. This mode can be used to control valuable goods;

x = 5 sensor captures shocking protected objects;

x = 6 sensor captures crashing. This accident is identified by a distinctive acceleration and a drastic slowdown, for a certain time period and g-loads 1-10 G;

x = 7 sensor captures man's fall. It is recognized by a complex algorithm, which includes some conditions. It can be used to take care of elderly and sick people, for additional informing control service about attack on security matters.

Accelerometer sensitivity can be adjustable in **SETUP=parameter 16**. 9 grades from 1 to 9. Default = 5, 1 - min, 9 - max..

After sending SMS-messages the device will stay active for 5 more minutes to send more SMS-command or call the device to bug the area around.

In this software version detection combination is not possible, choose one sensor mode.

1234,mems=1

Autofon SE-Mayak v6.1d
Sensor=1/1 (move)
Mode: sleep
sms# 3

Autofon SE-Mayak v6.1d
Alarm! Sensor: move at: 14-02-2012 12:10:00
Bat.: 5,85 V (100%) T: +25 °C
Sensor=1/1 (move)
Mode: sleep
sms# 3

The current accelerometer settings can be found out from any information SMS.

ENG

Sensor=0/1 [off]
Sensor=1/1 [move]
Sensor=2/1 [keep]
Sensor=3/1 [move+k]
Sensor=4/1 [turn]
Sensor=5/1 [shock]
Sensor=6/1 [crash]

The second number (after the «/» symbol) - reaction to sensor alarm, can be set in **SETUP=parameter 15**.

GPRS–monitoring

The device can continuously track the object movement and send information to monitoring server via GPRS technology to monitoring server. Admin can monitor all movements of the object from any computer connected to the Internet. You must register to a monitoring server, log into your profile and add a new device using a unique **IMEI** number, which is sent by the device in every information SMS or can also be found out by SMS-command **(password,?)**. Then you must configure the device for data transfer via GPRS to monitoring server, using commands:

password,i1=APN

password,i2=IP and port monitoring server

password,i3=package sending interval

«AutoFon KSA» - recommended free monitoring server

http://control.autofon.ru   i2=176.9.114.139.20102

Find a list of available monitoring servers on our website www.autofon.ru

(password,i3=xxx)
Turning GPRS-monitoring on / off

> 1234,i3=060

> l2=195.24.68.72.7774
> l3=060
> Bat.: 5,85 V (100%) T: +25 °C

After turning GPRS-monitoring on, **Autofon SE-Mayak** will send data packets to monitoring server with set in **xxx** interval (from 010 to 240 seconds). Example: **password,i3=030** turns on sending GPRS-packets every 30 seconds.

To turn GPRS-monitoring off send SMS: **password,i3=000**

> **To improve tracking quality, the device sends packets by every turn. If GPRS-monitoring is switched on in interval mode, then one data package will be sent at every activation.**

(password,i1=internet.mts.ru)
Setting APN

> 1234,i1=internet.mts.ru

> Autofon SE-Mayak v6.1d
> I1=internet.mts.ru
> I2=195.24.68.72.7774

This command allows you to configure GPRS APN settings.

(Example: 1234,i1=internet).

Please contact your service provider for more information about APN settings

(password,i2=xx.xxx.xx.xxx.xxxx)
Setting IP-address and port

> 1234,i2=176.9.114.139.20102

> I1=internet.beeline.ru
> I2=176.9.114.139.20102
> I3=060

Example: **1234,i2=176.9.114.139.20102**, where **1234** – is your password, **176.9.114.139** – monitoring server IP-address, **20102** – port. These settings can be found on the monitoring server website.

(password,box=x)
«Black box» settings

This command controls «black box» mode. If isn't possible to send GPRS-package to monitoring server coordinates are stored in flash-memory and sent to server when possible.

1234,box=0 «black box» is off, memory is cleared,

1234,box=1 «black box» is on,

1234,box=2 cleaning «black box» memory without changing operation mode,

1234,box? checking «black box» status.

All information SMS-messages include «black box» status.

«Black box» can hold up to 98000 packets, new data replace the oldest.

Important notes about GPRS-monitoring:

1. GPRS mode needs more battery power, use it with an external power supply (SE+ eddition only), otherwise battery life will suffice for about 24-48 hours of nonstop working.

2. To suppress coordinates scatter during parking in GPRS-monitoring activate «parking stars» mode in SETUP=parameter 14. In this mode the device sends coordinates to monitoring server only if its accelerometer detects movement.

3. This device allows allows the use of a continuous monitoring mode, only if external power is on / movement is detected / there is a signal from the external input. All of these options are described in command SETUP= (page 20)

4. GPRS has to be available for SIM card by service provider.

5. GPRS-traffic international roaming price can be high, check rates with your service provider.

6. Even if GPRS-monitoring is on it is possible to control the device via SMS and receive a response.

7. All GPRS settings are saved in nonvolatile memory and don't change when power is off.

SMS–messages examples

Invalid command message

| Invalid SMS-command. |
| Eng |

AutoFon SE-Mayak sends an Invalid command message to any cellular phone by using the correct admin's password.

Balance message

| Balance 195.25 Rbl. |
| Rus/Eng |

The device sends to admin's phone SMS, received in reply to USSD-request like *100#.

Сообщение о разряде батарей

| Warning: low power bat! |
| Eng |

Low battery message is sent, if battery charge is almost over.

This message isn't send if temperature is below zero, because voltage sinks and battery characteristic can by bias.

Message about password breaking

> **Attention! Somebody breaking password.**
> Eng

If password protection is on (**parameter 7** in **SETUP=**), then after catching some SMS with correct command and wrong password admin receives notification about it.

Message about admin's number changing

> **Your phone number deleted.**
> Eng

After receiving command to change admin's number the device sends notification to the old number.

Message about turning output channel on / off (SE+ eddition only)

> **Output channel on.**
> Eng

> **Output channel is off.**
> Eng

Message about turning accelerometer on / off

> **Sensor=0/1 (off)**
> Eng

> **Sensor=1/1 (move)**
> Eng

Accelerometer alarm message

> **Alarm! Sensor: Move**
> Eng

Working with external devices
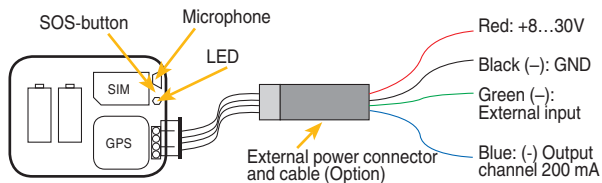### (SE+ eddition only)

AutoFon SE+ Mayak can work completely autonomously with or without external connections (which increases security and makes installation easier). To use external connections open the cover and carefully remove by lifting up the top board. Located on the underside is a 4-pin connector and plug-in. To move wires cut out perforation in the plastic box. Black and red wire can be connected to the power supply 8 … 30 V, blue - out additional channel, green - alarm input. It's also possible to use external power at the same time with batteries. External power supply is necessary to connect a fuse nominal 1A. When the external power is disconnected the device will automatically switch to battery power and send inform SMS-message to admin.

To connect **AutoFon SE+ Mayak** to output channel check to see if the current can go through this circuit! The maximum load output capacity is - 200 mA, otherwise the device will fry.

To be able to turn on output channel any time, use active (online) mode. The device will not hibernate.

To connect the external input use green wire. Once on the green wire will be negative potential **AutoFon SE+ Mayak** sends an SMS message to admin immediately. This may be a signal from the car alarm, shock, movement, fire, security loop sensor, etc. If the device is in hibernation, after signal on the green wire it goes to active mode immediately and sends SMS. In the next 5 minutes (adjustable parameter 4 in SETUP=) it remains in active mode and waits for possible commands. If they are not followed, **AutoFon SE+ Mayak** hibernates. The device keeps look after potential changing, so if the input signal is not lost, SMS-message is not sent again. The following message will be sent only after input signal re-appears.

Connection Diagram

SOS-button

Microphone

LED

SIM

GPS

External power connector
and cable (Option)

Red: +8…30V

Black (–): GND

Green (–):
External input

Blue: (-) Output
channel 200 mA

SUPPLEMENTAL INFORMATION

SMS–commands list

Table № 1

SMS command	Operation	Response	Notes
pass, +79037676045	Setting or changing admin number	1: +79037676045	1234 - default password. +79037676045 - admin numer
pass,TIME= 02012012,1300	Setting current date and time	02-01-2012 13:00:00	Date and time are set 13:00 2 january 2012
pass,t1=0201 2012,1320,30M,F	Setting the date, time, and mode Alarm T1	T1: 02-01-2012 13:20, 30M,F	Alarm T1 is set. 2 january, 13:20, interval 30 minutes, F mode
pass, t2=02012012, 1440,23H,SG	Setting the date, time, and mode Alarm T2	T2: 02-01-2012 14:40, 23H,SG	Alarm T2 is set. 2 january, 14:40, interval 23 hours, S and G mode
pass, t2=02012012, 1550,07D,G	Setting the date, time, and mode Alarm T2	T2: 02-01-2012 14:40, 07D,G	Alarm T2 is set. 2 january, 14:40, interval 7 days, G mode
pass,sleep	Interval mode	Mode: sleep	The device will activate by alarm clock
pass,online	Active mode	Mode: online	The device will not hibernate
pass,t1=01h pass,t1=G pass,t1=01h,G	Changing «Alarm T1/T2» mode and / or intervals only	T1: 01-01-2012 13:00,01H,G T2: 02-01-2012 12:00, 07D,G	
pass,p=5678	Changing password	PASS: 5678	5678 - new password

SMS command	Operation	Response	Notes
pass,SETUP=1005511132121222316311000	Changing general settings	**SETUP=10055111321212223163 11000**	If any of the values have an incorrect parameter, nothing changes. If there is no need to change all or any of options, put asterisk symbol instead
pass,?	Checking all settings and modes	**1: +79037676045 IMEI:808080808080808 SETUP=1005511123... I1=internet.beeline.ru I2=195.24.68.72.7774 I3=000 T1: 02-01-2012 12:00, 01D,S T2: 02-01-2012 12:00, 07D,G Bat: 5,85 V (100%) T: +25 °C Ext. power: off Sensor=1/1 (move) Mode: sleep sms# 3**	Information message with all settings and parameters, except password.
pass,S	Single GSM- coordinates definition request (Multi LBS)	**GSM: -59dB LBS: MCC: 250 MNC: 001 LAC: 772F 773H 127A 3210 CID: 0A16 1C32 AFF176D1**	This mode does not use GPS-module
pass,G	Single GPS- coordinates definition request	**Command OK. Wait**	Coordinates in the following format: N55.87871 E037.60307 (depending on the general settings)
pass,A	Dialing admin's number and turning microphone on	**Звонок на номер владельца**	Audio monitoring time can be set in setup
pass,K=0000 pass,K-	Turning output channel off (SE+ edition only)	**Output channel is off. Output channel off**	Output channel is off

SMS command	Operation	Response	Notes
pass,K=0120 **pass,K+**	Turning output channel on for some time (from 1 to 9999 seconds) or for unlimited time (SE+ eddition only)	**Output channel is on.**	Turning output channel on for 120 seconds or till receiving shutdown command K-
pass, **M=xxxxxx**	Balance and other USSD-requests. xxxxxx - request code	**Balance: 154.03 Rbl.**	
pass,i3=030	Setting package sending interval	**I3= 030**	From 010 to 240 sec. Turning GPRS mode off: i3=000
pass,box=x **pass,box?**	«Black box» package control	**Black box: on.** **SRAM: 0** **FLASH: 98304/0/0**	box? Checking «black box» status
pass,i1 **=internet.** **beeline.ru**	Setting APN	**I1=internet.beeline.ru**	Contact your service provider for information about APN settings.
pass,i2=176.9. **114.139.20102**	Setting IP and port	**i2=176.9.114.139.20102**	Our monitoring server is set as default
pass,mems=x	Turning on movement detection. Alarm if detected.	**Sensor=x/1** **Sensor=x/1**	Reactivation time is set in setup

LED indication

The device has LED, located on pcb next to the SIM card holder. LED indicates the current operating mode and the device status.

Table № 2

LED Indicator	Description	Incoming call reaction
Double long flash —— ——	Initialization. 2-4 seconds turning power on	The number is not available.
One short flash · · · · · · · ·	Active mode. GSM-module is on, registration in a GSM-network	The number is not available.
Two short flashes ·· ·· ·· ·· ·· ··	Active mode. GSM-module is registered in the network, waiting for sent SMS	The number is available. Doesn't pick up the phone.
Three short flashes ··· ··· ··· ··· ··· ··· ···	Active mode. The device complied all commands and is in standby mode waiting for new commands	The number is available. Picks up the phone, turns on the microphone.
Four short flashes + one long flash between ···· — ···· — ···· — ···· — ····	Active mode. GPRS-monitoring is on. Connected to server monitoring. Log in to the server successfully. There is traffic	The number is available. Picks up the phone, turns on the microphone.
One long flash between short flashes — — — — — —	Active mode. GPS-module is on. Searching for satellites	The number is not available. Doesn't pick up the phone.
No light	The device is in hibernation mode or power is off	The number is not available.
Steady light _____	CPU is stopped, the device is defective or no battery power.	The number is not available.

Faults & Solutions

Table № 3

Problem Description	Probable reason	Solution
The device does not hibernate, even if sleep mode is set	The device does not have time to hibernate, because it is receiving commands or is online because of an existing alarm.	Do not send commands to the device for some time. Check the settings SETUP=
The device does not detect GPS-coordinates	1. The device is screened by metal or out of sky sight. 2. There is strong radio interference next to the device. 3. The device is not sky directed	1. Put the device to the different location, without screening. 2. Try to get GPS-coordinates somewhere else. 3. Direct the device antenna to sky.
Batteries discharge quickly	1. Active (online) mode is set 2. GPRS is on. 3. The device sends incorrect information about battery charge. 4. Audio control is often used.	1. Set interval (sleep) mode. 2. Turn GPRS off or use external power. 3. Battery power indication depends on temperature. Battery loss is nonlinear. 4. Do not use audio control when it's not necessary.
The device is not responding to SMS-commands	1. Batteries are discharged. 2. Wrong password in SMS-command. 3. SMS-command contains Cyrillic letters. 4. Activation time has not come yet. 5. The device is out of coverage area. 6. No money on SIM card account, outgoing traffic is blocked. 7. Admin's number is not set. 8. Temperature is below -35°C. 9. The device is defective.	1. Check battery voltage, if less than 2700 mV - replace. 2. Enter the correct password in the message. If you do not know it – upload default software in service center. 3. Send command in Latin letters. 4. Wait for activation time. 5. Wait for coming to coverage area. 6. Replenish the device's account. 7. Send command to set admin's number. 8. Wait for temperature rise. 9. Contact service center.

Problem Description	Probable reason	Solution
GPS-coordinates are not accurate for about 50-500 meters	The device has found only three satellites or catches the reflected signal.	Put the unit in a location with a more stable GPS-signal reception

If you have any problems or questions during setup or operation read «Faults & Solutions» and forum on website www.autofon.ru before contacting the service center.

AutoFon support:

8-800-555-79-77(free calls from Russia)

+7-495-504-12-33 Moscow, from 9 to 18 hours.

TECHNICAL SUPPORT

AutoFon SE-Mayak software update

Software can be updated via AutoFon server. To upgrade software via GPRS send command:

password,update=176.9.74.42.1302

Receiving this command **AutoFon SE-Mayak** sends confirm SMS and connects to the server. After successful connection **AutoFon SE-Mayak** receives new software, disconnects and self¬programs, then the device starts working same as after if it has been powered up. Time Clock doesn't change. After that the device sends to admin successful software update confirmation. If it's not possible to connect to the server or there is no new software, the device sends a warning message and switches back to the current operation mode.

To update the software APN (i1, page ….) has to be correct.

Attention! Software update may take several minutes. During this time **AutoFon SE-Mayak** doesn't execute any functions. Update server address can be changed.

Information message parameters

Message content	Description
AutoFon SE-Mayak v6.1d	The device name, hardware and software version v6.1d
04-03-2012 13:45:04	Internal clock's date and time at the moment of composing new SMS
Command OK. Wait. **Sat: 4 at 47s.**	Number of GPS-satellites were found and determination time.
E037.143318 **N55.778838** **55 46`47.6"N** **37 31`25.18"E** **N55 52.7213** **E037 36.1908**	GPS-coordinates. Can be displayed in three formats: • Degrees • Degrees minutes seconds • Degrees minutes. Coordinates format can be set in SETUP=parameter 8 (page 20). Received coordinates can be typed in map services search line to see location point on the graphical or satellite map.
http://m.maps.yandex.ru/ **?l=maps&ll=037.** **143318,55.778838&pt=** **037.143318,55.778838&z=13**	Yandex hyperlink. If your phone supports hyperlinks, you can open it right on a map showing the location point.
http://map.google.ru/ **m?q=55.778838,037.143318**	Google Maps hyperlink. Most popular smartphones open this hyperlink in the built-in map application, which is more comfortable and functional than a mobile browser
http://map.autofon.ru/ **?gl=55c35923103933399004** **0312132352534 21349845** **2359D34034G3423498S** **2564834968739 6234FA0117** **D59F55005**	Hyperlink to autofon.ru By following this type of hyperlink, besides location would be displayed all settings in expanded form.
GSM -68dB	GSM Level quality. The smaller the number, the better quality it has. Minimum possible level: - 108 dB, maximum - 30 dB
MCC: 250 MNC: 001 **LAC: 17D5 17D5 0321 0321** **CID: 0F55 0F52 42EB 42EE**	IDs closest GSM base station for determination of approximate position based on the LBS-location method. To convert this data to geographic coordinates use LBS-location services.
Speed: 73 km/h	Current object speed at the time of positioning. Altitude
Altitude: 177 m **Accur: 10 m**	
HDOP: 1.2 VDOP:2.4	Horizontal and vertical coordinates accuracy setting
1: +79037676045	Currently installed admin's number
IMEI: 359231039333995	Unique GSM-modem the device number
SETUP=1025561721 **011119111000000**	The current device settings. 25 digits (page 19)
l1=internet.mts.ru	GPRS setting: Ask operator for APN-address
l2=176.9.114.139.20102	IP-address and monitoring port, where data are sent by GPRS
l3=30	Interval to send packets to monitoring server via GPRS
T1: 05-03-2012 12:00,01D,F **T2: 12-03-2012 15:30,07D,G**	Alarm clock T1 and T2 settings. Date and time of next activity, activation interval in minutes, hours or days, and mode.
Sensor=1/1 (move)	Accelerometer settings (page 28)
External power: off **Output channel on.**	External power indicator, output channel indicator.
Bat: 6.16 V (82%) T: +34 °C	Battery charge and temperature
Mode: sleep **sms#11**	Mode (online or sleep). SMS number after turning power on

Warranties

AutoFon warrants that **«AutoFon SE-Mayak»** the device shall be free from defects for 1 year from the date of purchase in case of following service conditions. Warranty does not apply to batteries. If anything goes defective, vendor undertakes responsibility to repair or exchange the device for free. This warranty does not cover problems or damage resulting from accident, abuse, misapplication, or any unauthorized repair, modification or disassembly; improper operation or maintenance, usage not in accordance with product instructions or connection to improper voltage supply.

For all matters relating to the device using and warranty support, contact seller or installation center.

WARRANTY CARD

Type: **AutoFon SE-Mayak**

Software version: _____

Date of sale / installation: _____

Name and stamp of seller
(installation center): _____

Seller's signature: _____