ETLOC
SECURITY

**ETLOC-50 SECURITY
Installation manual**

GPS security for vehicles

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1.Functions of GPS locator ETLOC–50 SECURITY

1.1.   Direct view of the vehicle position on the map

The function allows you to view current vehicle position on the map. Maximum privacy protection - no one except the owner and authorized persons can track the vehicle. Due to direct communication with the GPS locator no third party (eg. Assistance agency) has access to the information about the vehicle.

1.2.   Vehicle security

GPS locator ETLOC-50 SECURITY can be used to secure the vehicle independently (GPS protection and GPS higher level protection "GPSS") or in conjunction with an external car alarm (INPUT protection).
In case of a security breach alarm is triggered, which at once informs users and autonomously operates an integrated relay in the unit.

1.2.1.Vehicle protection

1.2.1.1. GPS protection

GPS protection mode activates an alarm when the vehicle is put into motion while the ignition is off (this security is most effective against vehicle towing). It is recommended to have the GPS protection permanently turned on. There is no need to deactivate the GPS protection before driving. When you start the car, the GPS protection is automatically suspended and reactivates itself again when you turn ignition off.

1.2.1.2. GPS higher level protection (GPSS)

This mode is identical with GPS protection mode described higher, but does not evaluate car ignition status. Alarm gets activated every time when the vehicle starts moving. GPS higher level protection mode is controlled via a mobile application or dialling a phone number of the GPS locator from authorized telephone number (GPSS protection ON - 2x rings and then the call is rejected, GPSS protection OFF - the call is immediately rejected).

1.2.1.3. INPUT protection

INPUT protection mode is functional only in case a vehicle external alarm is installed in the vehicle and its output is connected to the locator or in case there is an SOS button installed in the vehicle. INPUT protection is permanently active. Alarm is triggered by activating the car alarm (siren activation) or by pressing the SOS button.

1.2.2.Alarm

Alarm can be triggered by:
 A) disruption of GPS protection or GPS higher level protection (GPSS) – **GPS alarm**
 B) external car alarm or SOS button – **INPUT alarm**
 C) over-speeding alarm, low voltage car battery alarm – **SERVICE alarm**

1.2.2.1. GPS alarm

After the GPS alarm is triggered the locator sends to all authorized phone numbers (up to three authorized phone numbers can be set) SMS messages on a regular basis for a preset period (the period can be set in minutes or kilometres). The default setting is for the duration of GPS alarm to send 10 SMS with a period of 5 minutes.

Alternatively an automatic alert call to an authorized phone number can be activated (this option is enabled only for the first phone number from the list of authorized numbers).

GPS alarm can also autonomously control the integrated relay of the locator and actively respond to the situation, for example by activating car siren or warning lights.

Note:
Turning off the GPS alarm is done via dialling a phone number of the GPS locator from authorized telephone number.

The device dispose of a sophisticated algorithm for activation of GPS alarms. In very rare cases an activation of false alarm may occur which does not have to be caused by defect of the device or wrong installation. This situation might happen in garages and close to high buildings where the device can receive for longer time bad or reflected GPS signal.

1.2.2.2. INPUT alarm

After the INPUT alarm is triggered the GPS locator sends to an authorized phone number (up to three authorized phone numbers can be set) one info SMS (the content of this SMS is user-editable).

Alternatively an automatic alert call to an authorized phone number can be activated (this option is enabled only for the first phone number from the list of authorized numbers).

INPUT alarm can also autonomously control the integrated relay of the GPS locator and actively respond to the situation, for example by activating car siren or warning lights.

Note:
In the case the GPS alarm has already been triggered, the INPUT alarm will not be activated.

1.2.2.3. SERVICE alarm

After the SERVICE alarm is triggered the GPS locator sends to an authorized phone number (up to three authorized phone numbers can be set) one info SMS.

Note:
The informational SMS contains the world time GMT. In case your GSM operator provides local time corrections, those corrections are also included in the SMS (e.g. 10:02:04GMT +02:00h).

1.3. Remote control of appliances in vehicle

The function allows to remotely control (except alarm) a switching relay that is integrated inside the GPS locator. It is possible to remotely control for example external heating, warning lights, car siren and circuits in the vehicle.
The relay can be controlled via SMS (can be immediately turned on and off or turned on for a preset time)

2. Installation of the unit

We highly recommend to entrust the installation to the professional installer's garage. Please contact your sales manager to receive last version of installation manual.

3. Control of GPS locator ETLOC-50 SECURITY

The GPS locator can be fully controlled via SMS commands that are sent to the phone number of the SIM card inserted into the unit. Each command is always sent together with a PIN code which defines authorized users. The PIN code is a four-digit number and can be changed by the user. By default the PIN code is set to **4321** (further on **** symbols are used instead of PIN code in the text). The commands are not case sensitive. In case the command is not sent in a correct form the GPS locator will respond with SMS message **COMMAND ERROR**. In case the command is sent with incorrect parameters the answer is **key word ERROR**.

3.1. Position SMS request

The GPS locator responds to POSITION command with one SMS.
Time that the locator needs to respond depends on the fact if the GPS module is currently switched ON (at least one GPS protection is ON or the car engine is ON). In case the locator does not manage to detect valid GPS data within 5 minutes from receiving the request, the GPS locator sends SMS with last known data marked as * OLD *.

Command form: **** **POSITION**

4321 POSITION

Example: Requesting current GPS position

The user can send the command POSITION requests regardless the state of protections or activated alarms.

Default text setting (change is possible by command PTEXT)	
GPS coordinates (direct HTML link)	
Speed of the vehicle	
Date	
GMT and time correction	

Position and speed
of your car:
http://satmaps.net/?q
=50d12.5759N+015d
048.9452E
0km/h
10.09.10
10:08:01GMT +02:00h

Example: Response to a position request

3.2. Relay controlling using SMS (excluding alarm)

3.2.1.Relay switching for unlimited time

The relay in the GPS locator can be switched using **SWITCH** command with parameter **n** and thus remotely turn ON/OFF particular devices in the vehicle for unlimited time (e.g. car siren).

Command form: **** **SWITCH n**
n = 0 – unswitched relay
n = 1 – switched relay

4321 SWITCH 1

Example: Switching the relay

3.2.2.Relay switching for preset time

The relay in the GPS locator can be switched using **SWITCH** command with parameter **xy** and thus remotely turn ON/OFF particular devices in vehicle for a preset time period.

Command form: **** **SWITCH xy**
x – time period of switched relay (from 0 to 240)
y – time unit of the period set by the parameter **x**
    y = s – seconds
    y = m – minutes

If you send a command **SWITCH** without any parameters the GPS locator will automatically take over settings from the **RELAY** command.

4321 SWITCH 5m
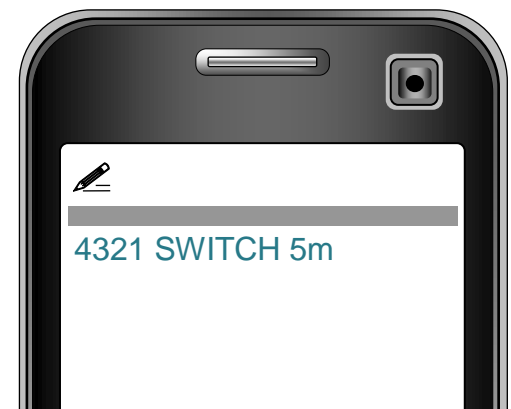
Example: Switch the relay for 5 minutes and after this time period elapses automatically return the relay to its unswitched state

3.2.3. Switch relay configuration at alarm activation

Sets the time period for which the relay will be switched at GPS and INPUT alarm.
Command form: **** **RELAY xy ig**
x – time period of switched relay (from 0 to 240)
y – time unit of the period set by the parameter x
    y = s – seconds
    y = m – minutes
ig – determines under what circumstances the relay will be switched
    i – when INPUT alarm is activated
    g – when GPS alarm is activated
    ig – when INPUT or GPS alarm is activated
Parameters i,g are optional. If the command **RELAY** is sent without parameters **ig** (the value **ig** is set automatically).

Default setting: **1s ig**

4321 RELAY 30m g

Example: The relay will be switched for 30 minutes at GPS alarm activation
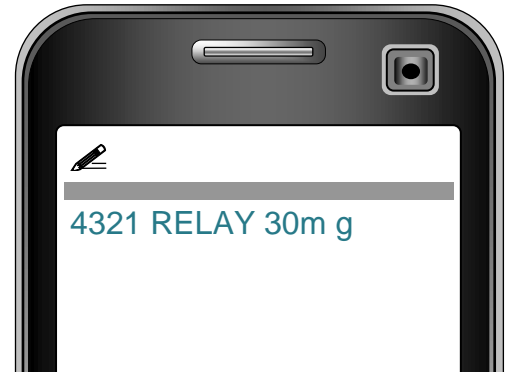
3.2.4. PIN code change

Command form: **** **PIN xxxx yyyy**
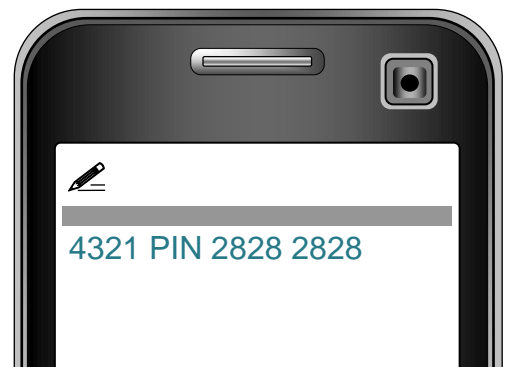**xxxx** – new PIN code
yyyy – new PIN code confirmation

Default setting: **4321**

For security reasons we recommend to change the default PIN code as soon as possible. In case you forgot your PIN please contact your seller.

4321 PIN 2828 2828

Example: Change PIN code from 4321 to 2828

3.2.5. Entering of authorized phone numbers for alarm SMS and controlling of GPS higher level protection mode (GPSS)

Up to 3 authorized phone numbers can be assigned. Authorized phone numbers will receive alarm SMS in case of alarm and can control GPS higher level protection (GPSS). The telephone numbers must be entered in international format. Therefore the number must always begin with the **+** symbol.

Command form: ****** PHONE +aaaz +bbbz +cccz**

+aaa – first authorized number in international
        format
+bbb – second authorized number in international
        format
+ccc – third authorized number in international
        format
igs – determines whether alarm SMS to this phone num|
INPUT alarm / GPS alarm / SERVICE alarm

> **i** – INPUT alarm SMS will be sent to this number
> **g** – GPS alarm SMS will be sent to this number
> **s** – SERVICE alarm SMS (over-speeding, low battery voltage) will be sent to
> this   number

Parameters i,g,s are optional. If this phone number is entered without these parameters, it means that SMS's will be sent to this phone number from INPUT alarm, GPS alarm and SERVICE alarm (the value **igs** is set automatically).

Up to 3 telephone numbers can be assigned. All entered (authorized) numbers can control GPS higher level protection mode by ringing the GPS locator number (see below). The telephone numbers must be entered in international format, so the number must always begin with the symbol **+** .

<u>Note:</u>
Authorized telephone numbers must have identification of calling number CLIP activated. In case this function is not active, function of GPS higher level protection cannot be controlled and it is not possible to control the GPS locator by ringing.

The first authorized number set by command PHONE is called in case of INPUT alarm or GPS alarm activation. Condition for calling the first authorized number is activation of this function by a command CALL.


4321 PHONE
+420777200333
+420602666888g

Example: Two authorized phone numbers are entered. To the number +420602666888 will be the alert SMS sent only at GPS alarm activation.

3.2.6. Setting of alert call in case of alarm

If the function is active, the first authorized telephone number in the list is automatically called in case of GPS or INPUT alarm. This alert call only warns the user about activated alarm (we recommend not to answer the call, it does not contain any voice information).

Command form: ****** CALL x**
x = 0 – call function is OFF
x = 1 – call function is ON

Default setting: **0**

4321 CALL 1
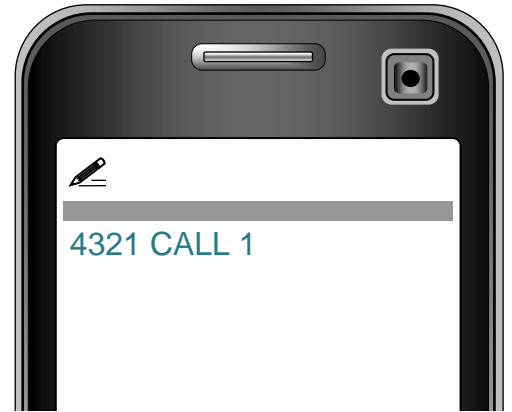
Example: Turning ON the function of alert call

3.2.7. Request for remaining credit in pay as you go SIM card

The GPS locator will respond by message from your operator containing info about current credit in the SIM card. This function is applicable only if a pay as you go card is used.

Command form: ****** CREDIT xxxxx**
xxxxx – dialled number for info about remaining credit in the pay as you go SIM card. Contact your GSM operator for the information.

4321 CREDIT *22#
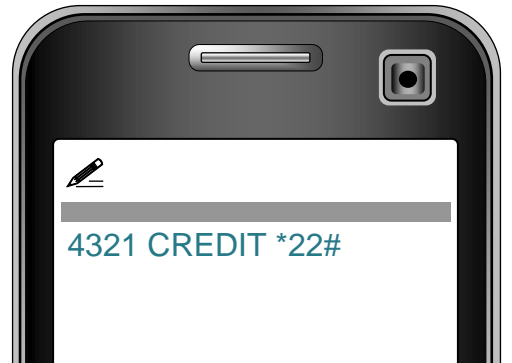
Example: Command for getting info about current credit in a pay as you go SIM card (Vodafone CZ) used in the GPS locator.

3.2.8. Way of displaying GPS coordinates in SMS

The function determines whether the GPS coordinates are displayed in text form or as HTML direct link.

Command form: ****** LINK x**
x = 0 – sending GPS coordinates in the text form
x = 1 – sending GPS coordinates as HTML link.

Default setting: **1**

4321 LINK 0

Example: Turning off the displaying of GPS coordinates as HTML link

GPS coordinates in text form can be displayed on the map at website www.satmaps.net.

Note:
If you want to use the HTML link function your mobile phone must be connected to the internet.

3.2.9.Configuration of SMS text sent at GPS alarm activation

GTEXT SMS is sent to authorized phone numbers at GPS alarm activation. The GPS coordinates or the link are automatically included at the end of the message.

Command form: **** **GTEXT xxxxx**
xxxxx – your text of the SMS (max. 74 symbols)

Default setting:
Alarm! Position and speed of your car:

4321 GTEXT Alarm!
They are stealing
your car:

Example: Setting your own GTEXT

3.2.10.Configuration of SMS text sent at INPUT alarm activation

The SMS with ITEXT will be sent to authorized phone numbers after INPUT alarm is activated. In case the ITEXT ends with symbol **":"**, the GPS coordinates or the link will be included at the end of the message.

Command form: **** **ITEXT xxxxx**
xxxxx – your text of the SMS (max. 74 symbols)

Default setting: **Alarm! Your car was attacked.**


4321 ITEXT Car alarm
is activated!
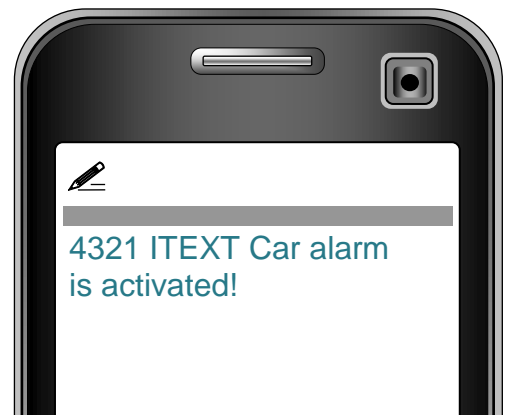
Example: Setting your own ITEXT

3.2.11.Configuration of SMS text sent as a response to a position request

The SMS with PTEXT is sent as a response to a vehicle position request (**POSITION** command). The GPS coordinates or the link are automatically included at the end of the message.

Command form: **** **PTEXT xxxxx**
xxxxx – your text of the SMS (max. 74 symbols)
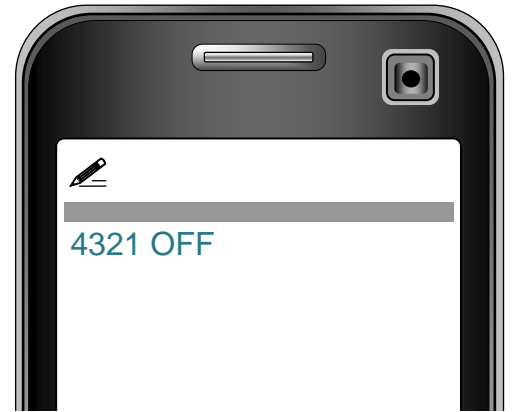
Default setting: **Position and speed of your car:**

4321 PTEXT Your car
is right here:
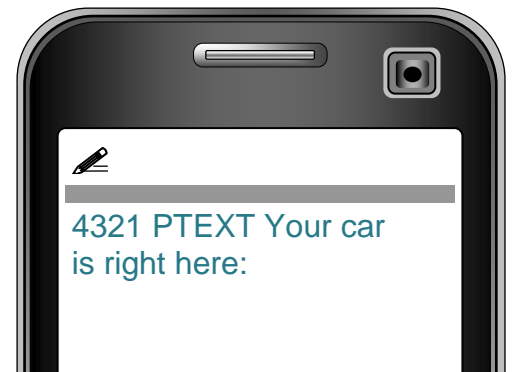
Example: Setting your own PTEXT

3.2.12. STAND BY – power management of the GPS locator

In STAND BY mode the GPS locator is switched OFF and its power consumption is 0 mA. STAND BY mode is recommended to be used for long time car parking (e.g. in winter).

Command form: **** **OFF**

4321 OFF

Example: Command for setting in STAND BY

Mode	Description	Power consumption
Ready	The device is ON and responds to SMS commands. GPS protection and GPS higher level protection are OFF.	Max. 20mA* Recommended maximum time for not using (driving) the car is 6 weeks.
GPS protection	The device is ON and responds to SMS commands. At least one GPS protection is ON.	Max. 40mA* Recommended maximum time for not using (driving) the car is 2 weeks.
STAND BY	The device is OFF and does not respond to any SMS commands.	0mA Recommended at long time parking of the vehicle.

*The power consumption will be temporarily increased by 20 mA when the relay is in the switched mode

In STAND BY mode the GPS locator does not respond to any SMS commands or calls. The GPS locator can be woken up from the STAND BY mode by either switching car ignition ON or by signal from external input (external alarm activation). The protections set before the STAND BY mode activation remains active.

3.2.13. Setting of confirmation message for SMS commands

If the confirmation message function is ON, after successful command processing, the GPS locator sends SMS with the text **command OK** to the telephone number that sent the original command. The confirmation SMS is not sent for the commands using different SMS response.

4321 CONFIRM 0

Example: Turning OFF the confirmation SMS

Command form: **** **CONFIRM x**
x = 0 – confirmation messages OFF
x = 1 – confirmation messages ON

Default setting: **1**
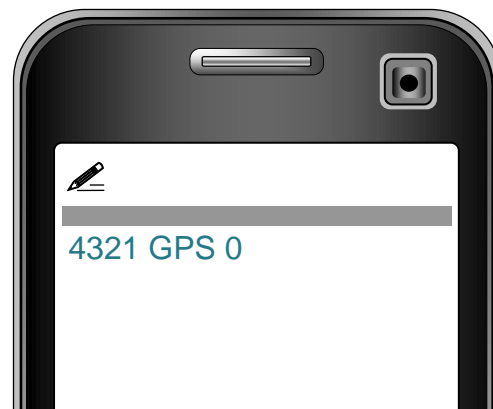
3.2.14. Turning off GPS security

The protection is automatically suspended when starting the vehicle. This command permanently disables the GPS protection.

Command form: **** **GPS x**
x = 0 – GPS protection OFF
x = 1 – GPS protection ON

Default setting: **1**

Example: Permanently turning the GPS protection OFF

3.2.15. Setting of time period for sending a current position information during GPS alarm activation

First alarm SMS is sent to authorized phone numbers immediately and next alarm SMS are sent every time either set distance in kilometers is covered or set time in minutes. Number of sent alarm messages within one activated GPS alarm is determined by parameter **Nz**. However the set mode of protection is still active. If the vehicle keeps moving new GPS alarm is activated.

Command form: **** **PERIOD xy Nz**

x – determines whether next alarm SMS will be sent after a certain time or distance covered
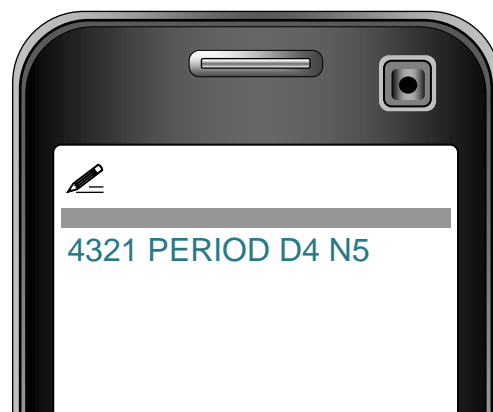   x = D – (Distance) after distance covered (Km)
    x = T – (Time) after a certain time (minuty)
y – determines the number of kilometers or minutes (y = 1 to 60)
z – determines the number of alarm SMS within one activated GPS alarm (z = 1 to 30)
    This parameter is optional and will be automatically set to value **N10** in case the parameter was not entered.

Default setting: **T5 N10**

Example: The SMS will be sent after each 4 kilometers covered after GPS alarm activation. It is 5 alarm SMS in total within one activated GPS alarm.

3.2.16. Checking the firmware version

Gets the firmware version of the locator.

Command form: **** **FW**

3.2.17.Detection of GPS locator configuration

Command format: **** **CONFIG**

The GPS locator sends SMS with current configuration as a response to CONFIG command.

PHONE - authorized number – all alarms are sent (igs)
RELAY - relay configuration
PERIOD - setting of period for sending SMS's at GPS alarm
CALL - call in case of alarm activation – 0 is OFF
CONFIRM – SMS commands confirmation OFF / ON
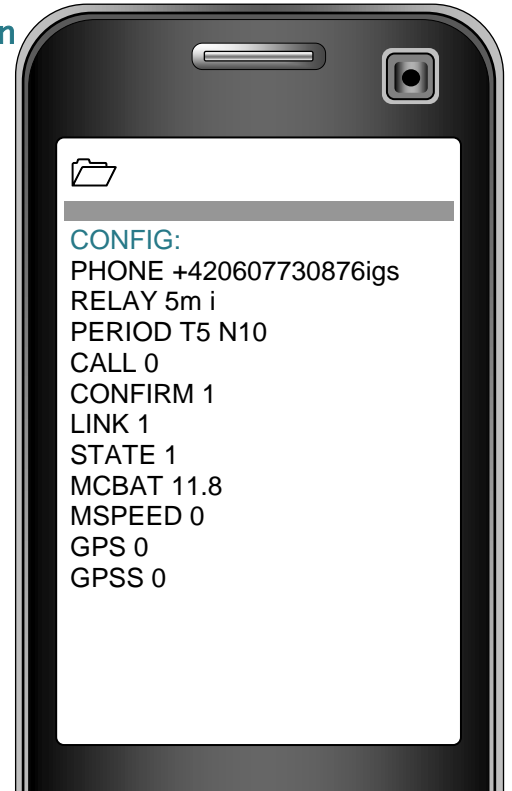LINK – GPS position numerically (0) / as HTML link (1)
STATE – disable / enable reply to STATE command entered without PIN
MCBAT – monitored min. vehicle battery voltage [V]
MSPEED – monitored maximum speed value [km/h]
GPS - mode of GPS protection – 0 is OFF
GPSS - mode of GPS higher level protection – 0 is OFF

CONFIG:
PHONE +420607730876igs
RELAY 5m i
PERIOD T5 N10
CALL 0
CONFIRM 1
LINK 1
STATE 1
MCBAT 11.8
MSPEED 0
GPS 0
GPSS 0

Example: Received SMS with a current configuration of GPS locator

3.2.18.Reset – restore default settings

The function resets all parameters of the GPS locator to factory default setting. After the command is sent, initialization of the GPS locator will be done and it is necessary to wait at least 2 minutes before the GPS locator is ready to process next commands.
This function does not affect assigned PIN code.

Command form: **** **RESET**

4321 RESET
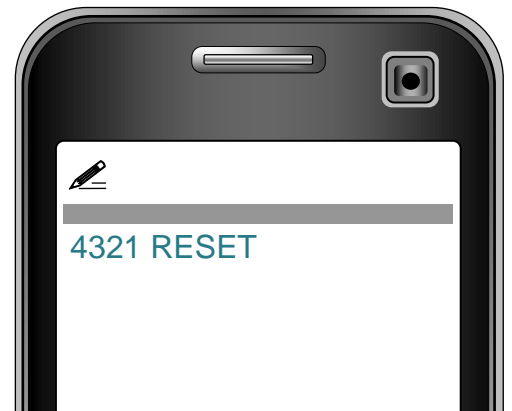
Example: Reset of the GPS locator to factory default setting

3.2.19.MCBAT – vehicle battery voltage monitoring

Command format: **** **MCBAT xx,x**
xx,x = minimum monitored vehicle battery voltage in volts, allowing one decimal number (e.g. 11,7).
Default setting: 11,8
Range: 10 – 25,5
x = 0 – deactivates the function

In case vehicle battery voltage drops below the set value, the user will receive alarm SMS.

4321 MCBAT 11,5

3.2.20.MSPEED – overspeeding alarm

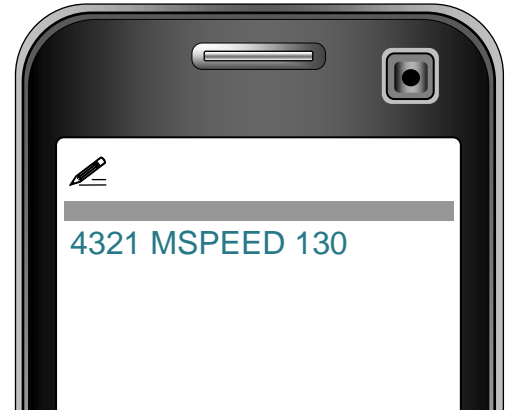**MSPEED - overspeeding alarm**
Command format: **** **MSPEED x**
x = monitored maximum speed value in km/h
Default setting: 0
Range: 0 – 255
x = 0 – deactivates the function

In case of multiple or long-term speeding (e.g. fast drive at motorway), the system sends SMS alerts once every 10 minutes.

4321 MSPEED 130

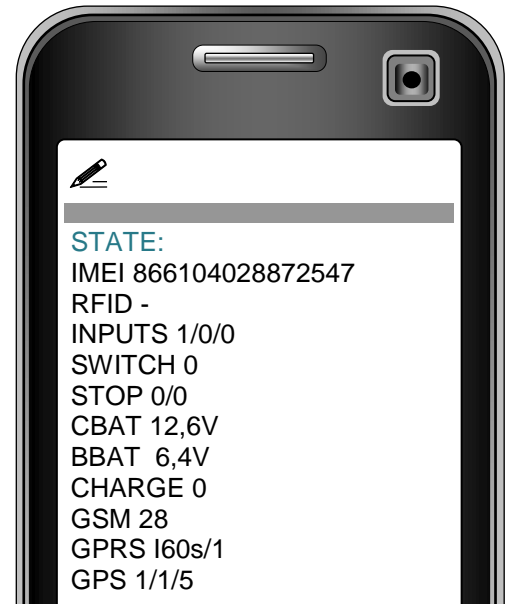### 3.2.21.STATE – vehicle unit state information

Command format: **** **STATE**

SMS command STATE can be entered also without PIN. It may serve as correct installation check-up. The user may disable STATE command without PIN verification so it will be processed only in case it is entered together with PIN code.

Command example: **0000 STATE**
Command example: **STATE**

1. IMEI – a unique identification number of a vehicle unit
2. RFID – not used in current FW version
3. Inputs states
   IGNITION / Input ALARM 1 / Input ALARM 2
4. Switching relay state
5. STOP function state – not used in current FW version
6. Vehicle battery voltage
7. Backup battery voltage
8. Charging of the backup battery
9. GSM signal power
10. GPRS state
    Data transmission frequency / Data network connection
11. GPS module state
    GPS module turned OFF/ON / Current position unknown/known / Number of visible satellites

STATE:
IMEI 866104028872547
RFID -
INPUTS 1/0/0
SWITCH 0
STOP 0/0
CBAT 12,6V
BBAT 6,4V
CHARGE 0
GSM 28
GPRS I60s/1
GPS 1/1/5

SMS reply
Note: 0 – no/off, 1 – yes/on

Enabling/disabling SMS replies to command STATE without PIN entered
Command format: **** **STATE x**
x = 0 – SMS replies disabled
x = 1 – SMS replies enabled

Default setting: **1**

Command example: **0000 STATE 0** (disable SMS replies to STATE command without PIN entered)

Note:
In case SMS reply is disabled orange LED on the vehicle unit will be flashing.

4.Technical specification

GSM Specifications	
Frequency	Quad-Band GSM 850/900/1800/1900 MHz Compliant to GSM phase 2/2+
GPRS	GPRS multi-slot class 12/10 - Class 4 (2W @ 850/900 MHz) - Class 1 (1W @ 1800/1900 MHz)
SIM card	Micro
Integrated GSM antenna (optional version ETLOC-50E SECURITY with external GSM antenna available on demand)	
GPS Specifications	
GPS Chipset	22 tracking / 66 -acquisition channels GPS receiver GPS L1, C/A Code
Position accuracy (CEP)	Autonomous < 2,5 m
TTFF (Open sky)	Cold start: 32 s (typical) Warm start: 3 s Hot start: < 1 s
Sensitivity	- 165 dBM
Optional version with GPS/GLONASS/GALILEO/QZSS available on demand	
Interfaces	
Digital outputs	Switching Relay – the maximum current carrying capacity of the switching relay is 12/24 V DC/ 5 A (max 60 W) STOP output - max 350mA
Analog inputs	Ignition (+12/24 V)
Indicator LED	Red - GSM, Green - GPS, Yellow - service
Digital inputs	INPUT ALARM 1 (+12/24 V) / INPUT ALARM 2 (GND)
GSM/GPS Antenna	GSM connector (ETLOC-50E SECURITY model)
USB port	
General Specifications	
Processor	Silicon Labs
Logger capacity	131 072 records
Dimensions	84x54x20 mm
Weight	51 g
Power supply	12/24 V DC
Operating temperature	-40 °C to +85°C
Power consumption	Ready – the device is ON and responds to all commands (GPS is OFF) – max. 20 mA GPS is ON – the device is ON and responds to all commands (GPS is ON) – max. 40 mA STAND BY – the device is OFF until the ignition is turned on – 0 mA
Air Interface Protocol	
Transmit protocol	TCP, UDP, SMS
Battery low voltage alarm	Integrated A/D converter which enables voltage measurement
Towing alarm	Integrated accelerometer