

# POSITRA COMMUNICATOR

## Installation and Operation Guide



## GC 072 230 F

GSM, GPRS, GPS COMMUNICATOR

- Collection and transmission of positions from vehicles into Fleet Management Systems
- Transmission of alarms from vehicle security device

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**LEVEL**<sup>®</sup>



**Dear customer,**

Thank you for purchasing our GSM Communicator POSITRA GC 072 230F. The POSITRA communicator is intended for easy installation into vehicles where it provides reception of GPS coordinates, inputs and outputs operation connected with car alarm system, saving measured data in the log memory and online communication with a server and integrator application via GSM/GPRS.

**The main applications are vehicle localization, fleet management, electronic book of rides, vehicle and crew security.**

**Other features:**

**Transmission of alarms from vehicle security system** to a mobile phone of the owner or to security agency dispatch center.

**Exact localization of vehicle using the GPS coordinates**, sent to mobile phone of the owner or to security agency.

The communicator fully supports SMS commands for parameter settings, setup of output values, localization and alarm transmissions.

System integrators can use the GC 072 Control Panel software that provides variety of options for changing configuration parameters of the unit and firmware upgrade using the USB cable connection, GSM data call or GPRS connection.

For optimal use of the POSITRA communicator, we recommend to read this user guide carefully. After getting to know the product operation, it is as simple as using a mobile phone. However, it is recommended to contact a installation company for installation of the device and putting it into operation.

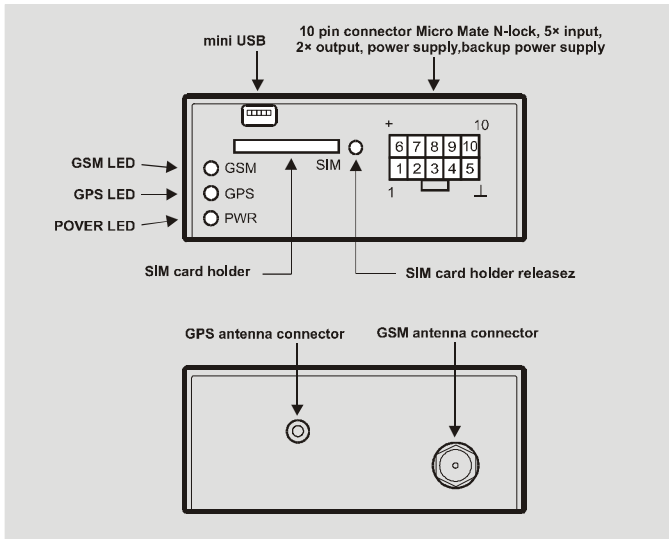
**LEVEL Ltd.**

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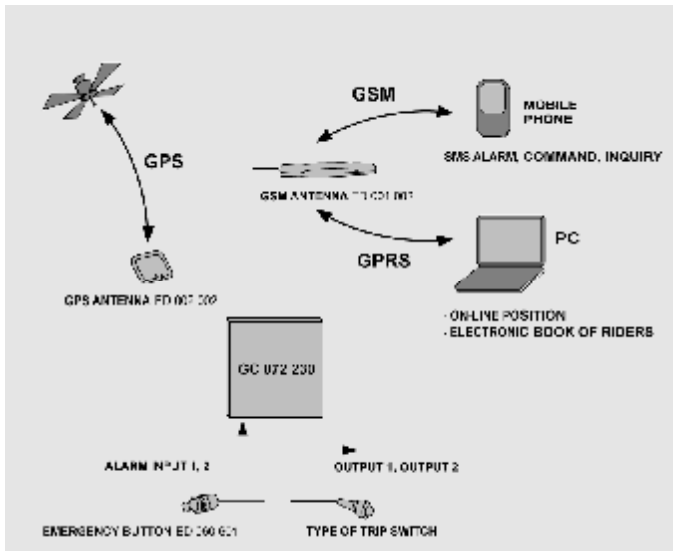
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# 1. Description

## 1.1. Description of the POSITRA Communicator



## 1.2. Operation Description



### **1.3. Standard Set of Accessories and Optional Accessories**

	<b>Accessories delivered in the standard set</b>
GC 072 230	POSITRA Communicator
ED 001 002	GSM antenna flat – stick-on to the glass or plastic
ED 002 002	GPS antenna active with SMB connector
CB 170 203	Electro-mounting set (10pin Micro Mate N-lock connector, cables 2 m)
CB 161 000	Set of installation parts
	<b>Optional accessories</b>
ED 060 601	Emergency button
ED 060 615	Switch of trip type (work- private)
ED 060 614	Vehicle relay (12V, 30 A, switching, in plastic case, Faston)
CB 170 020	PC-USB cable

### **1.4. Basic Operation Description**

When the vehicle ignition is switched on, the unit “wakes up” from the sleep mode with low power consumption, the unit gets connection to the internet via GPRS and starts sending packets to the predefined server. At the same time the unit starts saving data about the ride into its memory. The position is saved each 200 meters but maximum once per two minutes. Switching the ignition will stop saving the ride data and it will signalize to the server to start downloading the ride data from unit’s memory. After the downloading is finished, the unit will switch back to the sleep mode to save power consumption and it will stop sending the ID packets.

### **1.5. Additional Features Description**

#### **Switch of type of trip work – private**

For switching the type of trip it is necessary to install the optional switch ED 060 615. When the type is switched during one ride, the ride will be divided into two.

#### **Alarm transmission from car security system**

The communicator can be connected to an output of car alarm system and be used as alarm status pager. Activation of alarm input will trigger sending an alarm SMS and ringing to a predefined phone number. The input is limited for one alarm message per minute.

#### **Security in emergency situations**

To use this feature, it is necessary to install the emergency button ED 060 601. Pushing this button will trigger sending an emergency SMS and ringing to a predefined phone number.

#### **SMS inquiry for current position**

SMS inquiry in format PIN GPSD sent from any mobile phone will ask the unit to reply to this phone number with an SMS that will contain the current geographical coordinates. The vehicle location can be then also viewed on the internet – for example at the free internet service located at [www.levelna.cz](http://www.levelna.cz) .

*Integrators can also use the GC 072 Control Panel software that offers variety of configuration parameters to be changed as well as firmware upgrade using any of the communication channels - USB, GSM and GPRS.*

# 2. Operation, Settings

## 2.1. Quick Start

### Inserting SIM card

Place the SIM card in the slot in the front side of the POSITRA Communicator. To eject the SIM card holder, use the yellow push button. The used SIM card must not be blocked by PIN, should have sufficient prepaid credit, erased SMS memory and activated data services.

### Settings of APN of the GSM operator

After connecting the GSM antenna and the +12V power supply, send from a mobile phone to the SIM card inserted in the unit the SMS command message as described in the table of command SMS:

Settings	SMS Response Password Value x Set to x	Password_APN_x APN „x“ Default: piccola APN of the GSM operator Internet
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### Settings of data sending to server

See the table of command SMS:

Settings	SMS Response Value x Value y Value z Set to x Set to y Set to z	Password_server_@x,y,udp,z Server.number “@x,y,udp,z” IP address of server Port number 0 = disabled in roaming, 1 = enabled 84.233.161.4 32769 0
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## 2.2. Settings and Operation – Table of SMS Commands

Basic settings and operation of the unit is done via SMS messages sent to the phone number inserted in the communication unit in vehicle.

### Format of SMS messages – small and capital letter make no difference.

PASSWORD Up to 8 characters a-z and 0-9. Default password is “piccola”.

space (marked as underline \_ in text)

COMMAND Name of command for required configuration

space (marked as underline \_ in text)

PARAMETER Value, ? = inquiry or . (dot) – to erase

One SMS message can contain up to 4 commands with parameters. Communicator confirm executing all commands by confirmation SMS.

PASSWORD\_command1\_parameter1\_command2\_parameter2\_command3\_parameter3\_command4\_parameter4

## Summary table of command SMS

<b>Change of PASSWORD</b>		
Settings	SMS Response Value x Set to x	Password_psw_x psw_x Up to 8 characters a-z and 0-9 Picola
<b>Change of PIN SIM</b>		
Settings	SMS Response Value x Set to x	Password_pin_x pin_x Four-digit PIN 1234
<b>Settings of APN</b>		
Settings	SMS Response Value x - O2 CZ - T-mobile CZ - Vodafone CZ - VF CZ prepaid Set to x	Password_apn_x apn „x“ APN of GSM operator internet internet.t-mobile.cz internet ointernet internet
Operators usually list their APN settings on their web sites.		
<b>Settings of APN login name – only at some operators</b>		
Settings	SMS Response Value x Set to x	Password_gprsname_x gprsname „x“ Login name for APN -
<b>Settings of APN password – only at some operators</b>		
Settings	SMS Response Value x Set to x	Password_gprpsw_x gprpsw „x“ Password for APN -
<b>Settings of server for sending data</b>		
Settings	SMS Response Value x Value y Value z Set to x Set to y Set to z	Password_sever_@x,y,udp,z Server.number „@x,y,udp,z“ IP address of server Port number 0 = disabled in roaming, 1 = enabled 84.233.161.4 32769 0



<b>Phone numbers list</b>		
Settings	SMS Response Value x	Password_telx_y Telx.number_“y” 1 - Phone number to send alarm SMS from alarm input 1 2 - Phone number to send alarm call from alarm input 1 3 - Phone number to send alarm SMS from alarm input 2 4 - Phone number to send alarm call from alarm input 2 5 - Phone number to send alarm SMS from emergency button 6 - Phone number to send alarm call from emergency button 7 - Phone number to send information SMS
	Value y	Phone number in international format
<b>Settings of USSD code for prepaid credit amount</b>		
Settings	SMS Response Value x	Password_creditchcmd_x Creditchcmd_“x” Vodafone CZ *22# O2 CZ *104*# T-mobile CZ *101#
	Set to x	-
<b>Settings of low limit of credit</b>		
Settings	SMS Response Value x	Password_creditlow_x creditlow_„x” Low limit of prepaid credit
	Set to x	0
<b>Settings of output</b>		
Settings	SMS Response Value x	Password_OUTx_y outx.value y 1 or 2
	Value y	0 or 1
	Set to y	1

## **2.3. What to do if something does not work**

<b>Problem</b>	<b>Solution</b>
Sends no SMS	Check GSM signal Check prepaid credit on SIM card
Sends zero GPS coordinates	Check settings of phone numbers list Check GPS signal Check GPS antenna

# 3. Installation

## 3.1. Definition of Usage, Safety

Before installation, please make sure that using a mobile phone as well as GSM communicator is not prohibited in the particular type of vehicle!

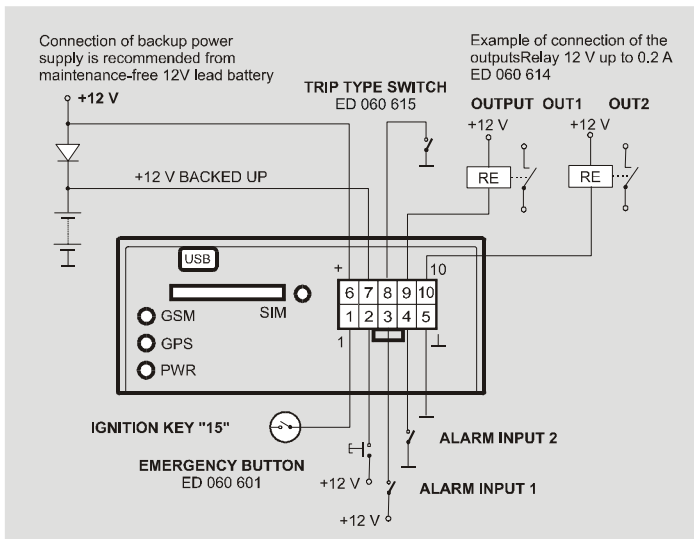
The communicator is designed for installation on a hidden, protected and dry place in the vehicle cabin or in the luggage or freight compartment of vehicle. The unit cannot be exposed to water or any other fluids. Communicator is intended for installation in vehicles with 12 V power system and grounded minus. Connection to +12 V power supply must be protected by a 5 A safety fuse.

Before the installation, disconnect the negative supply pole of vehicle battery (pay attention to coded car radios). It is recommended to install the antennas and switches first and then to draw the cables towards the unit. Connect the newly installed cables to the original lines with a tape.

To connect the connector pins, use only special tools. In case you don't have such tools, use soldering.

Do not install the communicator in places with increased level of interfering electromagnetic radiation such as near a radio transmitter antenna. Avoid installation in extremely hot places.

## 3.2. Connection Drawing



### **3.3. Hints for Installation**

#### **ED 001 002 – GSM antenna**

Install on the inside of the glass or plastic places under the dashboard. Do not place the antenna on a metal ground. Do not stick the antenna on metal parts of the car body or near the car radio as it could cause interferences to the radio. Fix the antenna with a stick tape.

#### **ED 002 002 – GPS antenna**

Install horizontally under the dashboard, under the plastic cover of cabin suction or in the plastic bumpers. Ensure the best view of the sky – there must be no metal objects in the view. Be aware of metal coating of glass in some cars – the GPS signal does not pass through such glass.

#### **ED 060 601 – Emergency button**

Install on the lower post on driver side or under the dashboard. Use a 7mm diameter drill.

#### **ED 060 615 – Trip type switch – private / work**

Install the switch on a suitable place under the dashboard. Use a 20mm diameter drill.

### **3.4. Checking Correct Function**

Put the communicator unit into operation as described in “Quick start” chapter.

#### **Checking power supply**

SMS inquiry	Password_power
Response	Power ExtPwr x V, y V
Value x	x = value of external power supply
Value y	y = value of external backed-up power supply

*Note: power supply can be checked using the signalization LED on the unit – as described in chapter LED signalization.*

#### **Checking GSM signal**

SMS inquiry	Password_gsm
Response	GSM_x_Credit_y_CellId_z_Signal_q
Value x	Name of connected GSM network
Value y	Balance of prepaid credit on SIM card
Value z	Name of connected GSM cell
Value q	Signal strength (0 – 32, 32 = maximum)

*Note: GSM signal lower than 5 is not usable, it is necessary to find better place for the GSM antenna. GSM signal can be checked using the signalization LED on the unit – as described in chapter LED signalization.*

#### **Checking GPS**

SMS inquiry	Password_gga
Response	\$GPGGA,t,x,y,q,n,r
Value t	Time hhmmss.sss h-hours, m-minutes, s-seconds
Value x	Latitude coordinates ddmm.mmmm (e.g. 5025.223400,N)
Value y	Longitude coordinates ddmm.mmmm (e.g. 01610.090300,E)

Value q	Validity of GPS data, 0 = invalid data, 1 = valid data
Value n	Number of satellites
Value r	Other GPS data

*Note: After connecting the power supply of communicator, take the vehicle to a place with good view of sky, switch the ignition key on and wait for about 5 minutes to get valid GPS data. Status of GPS can be checked using the signalization LED on the unit. GPS can be considered fully working when it has valid data and at least 3 satellites.*

# **4. Technical Parameters, Maintenance**

## **4.1. Technical parameters**

GSM	900 / 1800 MHz SIM card Plug-in 3 V GSM antenna connector FME – m
Communication	Call, SMS, GSM Data, GPRS
SMS	Alarm SMS SMS inquiry / response Change of configuration via SMS Launching action by name of action in SMS SMS with measured parameters Up to 4 parameters in one SMS
GSM Data Modem connection	Configuration editing Reading measured statuses Reading log memory of events Output control Firmware upgrade
GPRS connection	Class 10 Support for static and dynamic IP and VPN network UDP protocol Transmission protection by 128bits encryption All features like in GSM data
GPS	16 channels Antaris <sup>®</sup> LH highly sensitive Accuracy 2,5m CEP Antenna connector SMB – f
Log file memory	EEProm 256 kB i.e. 4000 positions or 5000 events 5000 km of traces
Power supply	10 to 15 V Power consumption with active GSM and GPS <70mA at 12V Power consumption in sleep mode <10mA at 12V 10-pin Micro Mate N-lock connector
5 inputs 2 outputs	Input max. 15 V Output current max. 0,2 A 10-pin Micro Mate N-lock connector
Pin 1	Input from ignition key +12 V
Pin 2	Input from emergency button Reacts to connection with +12 V

Pin 3	Alarm input 1 Reacts to connection with +12 V
Pin 4	Alarm input 2 Reacts to connection with ground
Pin 5	Ground
Pin 6	+12 V
Pin 7	+12 V backed-up (not charged from the unit)
Pin 8	Trip type switch Disconnected = work trip Connected with ground = private trip
Pin 9	Output OUT1 Output current max. 0,2 A at 12 V
Pin 10	Output OUT2 Output current max. 0,2 A at 12 V
USB	Connection to PC Configuration, firmware upgrade
Real time clock RTC	Date and time backed up by battery Synchronization of time with GPS
Protection class	IP 20
Dimensions	69 x 70 x 32 mm
Weight	50 g
Case	Plastic
Temperature range	Operation temperatures for GSM module -20 to +55 °C Operation temperatures for unit -40 to +85 °C

## LED Signalization

<b>GSM – yellow LED</b>	
0,5 s / 0,5 s	No GSM signal or no SIM inserted
1x short	GSM connected to network
2x short	GSM module + GPRS context connected
<b>GPS – red LED</b>	
0,5 s / 0,5 s	GPS module without signal
1x short	GPS module working correctly but without valid data
No light	GPS module has valid data (only in normal operation mode)
<b>POWER – green LED</b>	
2x short / 5 s	Normal operation mode
1x short / 10s	Low power consumption mode (sleep mode)

## **4.2. Maintenance**

The GC 072 230 POSITRA Communicator requires no special maintenance.

### **Upgrade of firmware and configuration**

For latest version of firmware please visit [www.levelna.cz](http://www.levelna.cz) and go to “Download” section where the current versions of firmware and Control Panel software can be found. Unzip the downloaded file and save to a disc. Make a connection with communicator in Control Panel using the USB cable, modem – data connection or via GPRS and make the upgrade.





## **Warranty conditions**

The manufacturer provides 24 months of warranty, starting from date of sale.

Warranty repair will be done within 10 working days after delivery of faulty unit to LEVEL provided all spare parts are in stock. If not, the customer will be offered an alternative solution.

Warranty repairs will be carried out in the manufacturer facility and the warranty repair is prolonged by the time of repair duration. Shipping back is determined by a service technician.

Warranty cannot be provided in case of loss or replacement of warranty certificate, when product is damaged by natural disaster, during transportation, unsuitable placement, improper use, using product in unfit conditions and also by breaking or removal of warranty seal.

The warranty does not cover the expendable supplies – batteries, coloring tape, etc. The warranty does not cover faults caused by installed software or its impact. The company does not bear liability for losses caused to user by device fault.

The warranty does not apply to faults caused by changing external conditions, such as legislature changes, GSM network modifications, changes of power supply conditions, etc.

Warranty must be claimed by presentation of completely filled-in warranty certificate and device for repair including accessories.

Duplicate of warranty certificate cannot be issued, the customer is responsible for its correctness and origin.

## **Warranty certificate**

Product name :	Type :
Serial number :	Date of sale :

Distributor :

Address, telephone, stamp :

Signature :

Accepted for repair	Date of sending	Problem description



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