PATRIOT V
GSM TECHNOLOGY

GSM/GPS communication module

INSTALLATION MANUAL

CONTENTS

Location of individual parts of the PATRIOT V

a) basic parts (obligatory)

Control unit – should be located in the car interior, in a hidden place in the lower part of the car, for example under the dash, seats or under the plastic covers of the door trim. Use the two sided tape supplied in the kit or wood screws.

GSM Antenna – antenna location is of vital importance for the correct operation and reception of the communication module. The antenna wire must not be cut, wound to another wire or connected to the car body and must be kept away from the wiring harness. The distance between the antenna and any other metal part should be at least 20 mm.

GPS Antenna – antenna location is of vital importance for the correct operation and reception of the GPS module. The antenna wire must not be cut, wound to another wire or connected to the car body and must be kept away from the wiring harness. The GPS antenna must be installed in horizontal position with direct access to skyline (the best placement is directly on the dashboard itself). Make sure that the antenna is not blocked by any metal parts.

Before installing the GPS antenna in the car interior make sure that the windows are not metallic. In case the windows are metallic it is necessary to install the GPS antenna outsider the car interior e.g. in the windscreen wiper motor, bumper, tender, etc.

b) accessories (optional)

Private/Business drive switch – should be installed on an accessible place from the driver`s seat, however we recommend choosing the place properly in order to avoid accidentally moving the switch. (It is necessary to drill a hole of $\varnothing$ 19 mm).

DALLAS reader for identification of the driver – (is not a part of the kit) - be installed in an accessible place from the driver's seat. (It is necessary to drill a hole of $\varnothing$ 4 mm and a groove for the wire).

Antennas location examples:
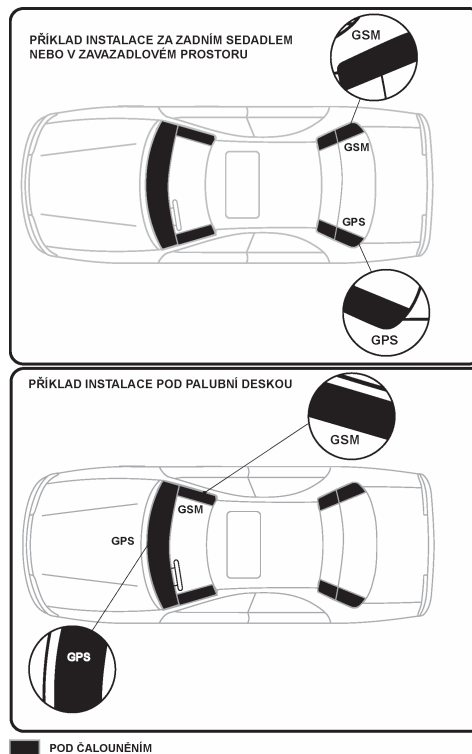
ELECTRICAL CONNECTIONS

CAUTION !

Disconnect the negative terminal of the vehicle battery before starting the installation of the system (pay attention to the coded radio sets). After finishing the installation connect the negative terminal back to the battery. This system is compatible for all **12/24-volt** negative ground vehicles.

Carry out connecting according to the following wiring diagrams and make sure to carry out the following steps:

- as long as it is possible join the wires of the communication module together with the original vehicle wiring harness
- black ground wire (-31) must be connected to the closest original vehicle ground point in the vehicle
- all wires connected to +12V (24V) must be secured by 3A safety fuse
- do not use glad-hands to connect the wires, but fixed soldered or pressed connections.

Connection of the individual wires:

Red wire - power supply +12V/24V (+30)
Black wire - ground (-31)
Green wire - +15 (ignition key in ON position)
Yellow wire - alarm input - min. impulse length is 1s (minus polarity)
Yellow-black wire – Dallas chip input
Brown wire - input - inf. about the car alarm status (minus polarity)
Violet wire - remote controlled output 1 (200mA minus polarity)
Blue wire - remote controlled output 2 (200mA minus polarity)
White-red wire - private/business drive switch
White wire - digital input (determined for controlling of additional equipment, e.g. independent heating)
White-black wire - do not connect
White-violet wire - do not connect
(**white-green)**
Antenna GSM - connect it to the connector on the front side of the module (ANT GSM)
Antenna GPS - connect it to the connector on the front side of the module (ANT GPS)

PROGRAMMING

Programming of the communication module serves to set configurations in such a way that they comply with the demands of the individual customer. The communication module is delivered in a pre-programmed mode setting (manufacturers´ settings - see chapter 13) which complies in most cases; however, it is possible to change these settings whenever they are needed.

Before beginning programming, make sure that you have inserted an activated SIM card **(with unblocked PIN code)** and that the communication module wires are connected properly.

Programming of the communication module is done by carrying out SMS commands from a mobile telephone. **During each inputting the commands it is necessary to input the safety code <code>, which is preset to 1111 (e.g. #1111#).**

1/ GPS TEST

After installation of single parts of the communication module PATRIOT V and electrical connections according to enclosed diagram, carry out the GPS test, which is used to check proper placement of the GPS antenna and GPS signal reception quality. Before starting the GPS test the vehicle must be placed in open area for about 15 minutes (direct visibility to the sky) and, as far as possible from buildings to provide maximum coverage with GPS signal.

Send the SMS command in the form: **#<code>#GPSTEST** to the telephone number of the SIM card placed in the unit of the PATRIOT communication module. **<code> is preset to 1111.**

After carrying out the command the module sends back the confirming SMS „**Test ON**" to the mobile phone, from which the command was sent. Then the communication module activates GPS and sends SMS with test results during next 20 minutes to the mobile phone, from which the command was sent. in the following form:

SAT : XX
GMT TIME:
26.01.2005 12:16
N:4935.7839
E:01715.0335
SPEED:0 km/h
XX number determines the number of visible satellites, if:
< 6 – GPS test failed - check (change) GPS antenna placement
= 6 – GPS test passed
00 – GPS signal is not available (metallic windows, no visibility of the sky – the vehicle is in the garage, etc.)

2/ Module configuration – configurating SMS

For setting – module configuration send the configuration SMS to the telephone number of the SIM card in the unit of the communication module in the form:

#<code>#CFG# <sout2><delay>#
<code> - safety code (preset to 1111)
<sout2> - dependence of output Nr.2 on +15 (**0** – output Nr.2 is controlled without influence of ignition +15, 1 – output Nr.2 is controlled after ignition key is switched off +15)
<delay> - prolonged immunity of the alarm input (**0** – reaction of the alarm input for impulses >0,5s, 1 - reaction of the alarm input for impulses >4s)

For example : #1111#CFG#00#
-   safety code 1111
-   dependence of output Nr.2 on +15 – without influence (0)
-   prolonged immunity of the alarm input - >0,5s (0)

Note: Values in bold give manufacturer`s setting, which should be suitable for most applications (this setting is renewed after reset of the module, see chap. 9).

If you would like to check, if you input configuration of the module properly, input an SMS command in the form: **#<code>#CFG (e.g. #1111#CFG)**
After carrying out the command the communication module will send two confirming SMS with data of configuration and input telephone numbers to the mobile phone, from which the command was sent, e.g. in the form :
ALARM DELAY: 0,5s
OUT2:CONTROLLED S15

3/ Inputting telephone numbers

For correct function of the communication module **it is necessary to input at least one telephone number**, which provides entitled communication with the module, and where the communication module sends all alarm information. The module allows communication only with numbers, which will be input into the module according to hereinafter mentioned procedure. The module ignores other telephone numbers (it is impossible to call the module). Maximum number of positions for telephone numbers input is 5. Positions, which will not have the telephone numbers input, will be ignored. For correct function of the communication module in your country and abroad it is necessary to input the telephone numbers in international format, e.g.:

           +420   123456789
           country code   personal telephone number

For inputting the telephone numbers send to the SIM card telephone number placed in the communication module an SMS in the form:

 #<code>#<n>TEL #<telnumber> #[<a> #]   (e.g. #1111#1TEL#+4201602123456#0#)
<code> - safety code (preset to 1111)
<n> - position of input telephone number (1 ÷ 5)
<telnumber> - telephone number in international format (e.g.+420602123456)
<a> - alarm filter for input telephone number (**0** – all alarms; **1** – alarm; **2** – voltage drop)

After carrying out the command the communication module sends a confirming SMS with data about input telephone numbers to the mobile phone, from which the command was sent, e.g. in the form:
TEL1:+420602123456:A0
TEL2: not input
TEL3: not input
TEL4: not input
TEL5: not input

Input of the other 4 telephone numbers, where you demand to inform you with alarm calls, can be done with the above mentioned procedure. Positions, where no telephone numbers are input, are ignored by the communication module.
If you would like to check, if you input the telephone numbers correctly, send an SMS command in the form:
#<code>#TEL   (e.g. #1111#TEL)
After carrying of the command the communication module sends a confirming SMS with data about input telephone numbers to the mobile phone, from which the command was sent, e.g. in the form:
TEL1:+420602123456:A0
TEL2: not input
TEL3: not input
TEL4: not input
TEL5: not input

Deleting a telephone number can be done with an SMS command in the form:
#<code>#<n>TEL ##   (e.g. #1111#1TEL##)
where **<n>** position of input telephone number (1 ÷ 5)
After carrying out the command the communication module sends a confirming SMS with data about input telephone numbers ("**not input**" will be mentioned instead of the deleted telephone number) to the mobile phone, from which the command was sent, e.g. in the form:
TEL1: not input
TEL2: not input
TEL3: not input
TEL4: not input
TEL5: not input

4/ Switching the communication module ON/OFF

This function is used for switching off the alarm information from the communication module to the user. Communication in reversed direction, i.e. user – module, remains. We recommend using this function esp. during service repairs, accident, communication module breakdown, etc.
To switch the module on input the SMS command in the form: **#<code>#PATRIOTON (e.g.#1111#PATRIOTON)**
To switch the module off input the SMS command in the form: **#<code>#PATRIOTOFF (e.g. #1111#PATRIOTOFF)**
where **<code>** is safety code and it is preset to 1111.
After carrying out the command the communication module sends a confirming SMS with data about switching ON/OFF to the mobile phone, from which the command was sent in the form: **PATRIOT ON (OFF)**

5/ Output control

The PATRIOT V communication module has 2 independent outputs (see Electrical connections scheme). Maximum work load of these outputs is 200mA. If you require higher work load (for turning on/off equipment with larger current consumption), it is necessary to use a relay of the correct dimensions (see. Electrical connections scheme). It is possible to control all the above mentioned outputs by means of SMS commands sent to the telephone number of the module in the form of:

a/ switching on
#<code>#<n>ON   (e.g. to switch on output No.1 #1111#1ON)
where **<code>** safety code preset to 1111
    <n>   is the number of demanded output
After carrying out this command the communication module will make connection of the relevant output (wire) to -31 (ground).

b/ switching off
#<code>#<n>OFF   (e.g. to switch off output No.1 #1111#1OFF)
where **<code>** is safety code preset to 1111
    <n>   is the number of demanded output
After carrying out this command the communication module will make disconnection of the relevant output (wire) to -31 (ground).

c/ short impulsing (turning ON and OFF)
#<code>#<n>IMP   (e.g. for short impulsing of output No.1 #1111#1IMP)
where **<code>** safety code preset to 1111
    <n>   is the number of demanded output
After carrying out this command the communication module will make short connection (2s) of relevant output (wire) to -31 (ground).
Further after carrying out this command the communication module will send a confirming SMS to the mobile phone, from which the command was sent, in the form: **Switch 1 ON (OFF, IMP)**

Caution : during switching the output on the power consumption of the communication module highly increases, this can have substantial influence on car battery discharge, if the vehicle is not started.

Engine block – to connect engine block output Nr.2 (blue wire) is used, which is necessary to be set in the way (configuration see chap. 2) that output Nr.2 is controlled after ignition is switched off, so the command for controlling output Nr.2 will be carried out after ignition is switched off. Practically it means that engine block is activated after ignition key is switched off, and then it is impossible to start the vehicle again. During switching the output on, the power consumption of the communication module highly increases.

6/ Information about the communication module status

To receive information about the communication module status and the vehicle position, send the SMS command to the telephone number of the SIM card inside the communication module in the form:
#<code>#STATUS   (e.g. #1111#STATUS)
where **<code>** is safety code preset to 1111

After carrying out the command the communication module sends a confirming SMS with data about status and position of the vehicle to the mobile phone, from which the command was sent in the form:

Vehicle at rest (in motion)
Car alarm deactivated (activated)
Switch 1 ON
Switch 2 OFF
GMT TIME:
26.01.2005 12:16
N:4935.7839
E:01715.0335
SPEED:0 km/h

Caution : to detect the status of the communication module the module must be switched on (see chap.4).

Information about the vehicle status
This function tests wire +15 in the vehicle. If there is voltage (+12V/24V) on this wire, the communication module interprets this status in information about the vehicle status as „**Vehicle in motion**" and, if there is no voltage on the wire +15, then the report will be „**Vehicle at rest**".

Information about car alarm status
This function tests brown wire connected to the car alarm. In the case of activated car alarm the „**Car alarm activated**" will be mentioned in information about the communication module status, in the case of deactivated car alarm there will be mentioned „**Car alarm deactivated**".

Information about vehicle position
This function allows detecting actual position of the vehicle, in which the communication module is installed.

7/ Test

Test of the communication module can be carried out by sending an SMS command to the telephone number of the SIM card placed in the communication module in the form:

#<code>#TEST   (e.g. #1111#TEST)
where **<code>** is safety code preset to 1111
After reception of the command the communication module sends SMS with confirmation of starting the test in the form: „**Test ON**".
Then alert sequence is automatically started to input telephone numbers with notifications „**Control test**"and sends SMS with text and data about actual position of the vehicle in the form:

Control test
GMT TIME:
26.01.2005 12:16
N:4935.7839
E:01715.0335
SPEED:0 km/h

8/ Change of the safety code

As long as it is necessary to change the safety code from any reason (preset to 1111), then input an SMS command in the form:

#<code>#CODE#<code1>#   (e.g. #1111#CODE#2222#)
where **<code>** is original 4-digit safety code preset to 1111
    <code1> is a new 4-digit safety code
Note : During handing over the vehicle with the communication module installed, please, notify the customer about necessity to carry out the change of the safety code!

9/ Reset of the communication module

If the setting of the communication module you have done does not suit you, it is possible to go back to manufacturer`s setting by inputting an SMS command:
#<code>#RESET   (e.g. #1111#RESET)
where **<code>** is 4-digit safety code preset to 1111
After reception of the command the communication module sends an SMS with confirmation of the reset in the form: **„Manufacturer`s setting".**
After the reset is carried out in the communication module all the manufacturer`s setting (see chap.18) will be renewed including safety code (1111).

10/ Voltage drop information

This function hands over the alert information: **„Voltage drop"** to input telephone numbers (according to setting in chap.3), if the voltage drops below 10V for the time period longer than 1 min. This function informs the user about gradual discharging of the power source (e.g. lights on after the drive).

11/ Private/business drive switch

Install this switch only in the case of the demand for identification of drives – private/business. Carry out the electrical connection according to the diagram of electrical connections.

12/ Identification of the driver – DALLAS chip (optional accessories-is not a part of the kit)

For usage of the driver identification function (only at the LogBook programme application) it is necessary to order the DALLAS set, which consists of a DALLAS reader, a DALLAS identification chip and piezo siren. Carry out the installation and setting of the Dallas reader according to the enclosed installation manual which is part of the kit.

13/ Manufacturer`s setting

PATRIOT V communication module is delivered in following preset:

► safety code - <code> - **1111**
► dependence of output Nr.2 on +15 – **1** - output Nr.2 is controlled after the ignition key is OFF +15
► prolonged immunity of the alarm input – **0** - reaction of alarm input for impulses >0,5s
► no telephone numbers are input - TEL 1÷5 :not input
► sort of delivered alarms – **0** – all
► communication module off – **PATRIOT OFF**
► outputs 1÷2 switched off – **Switch 1÷2 OFF**

14/ Verification of the communication module functionality
a/ install the communication module into the vehicle and carry out connections according to the diagram of electrical connections
b/ carry out GPS test (see chap.1)
c/ input at least 1 telephone number (see chap.3)
d/ switch the communication module on (see chap.4)
e/ run test and check listening in (see chap.5)
f/test private/business drive switch – if it is installed (see chap.11)
g/ test DALLAS chip – if you are going to use it (see chap.12)
h/ carry out final settings according to demands of the customer – the communication module user (telephone numbers input, change of the safety code)

It is necessary to record all carried tests and settings into the installation protocol, which is indivisible part of the guarantee documentation !!!

15/ Basic technical specifications:

Feeding voltage range: 9 - 24V DC
Power consumption in stand-by status: 19 mA (average value)
Operating temperature range: -25°C to +55°C
GSM Tri-band: 900/1800/1900 MHz
Dimensions (l x w x h): 120 x 60 x 25 mm
Weight: 130g

SMS COMMANDS - SUMMARY

COMMAND	FUNCTION	REPLY
#<code> #GPSTEST	GPS test	**Test ON** **SAT : XX** **GMT TIME:** **26.01.2005 12:16** **N:4935.7839** **E:01715.0335** **SPEED:0 km/h**
#<code>#CFG#<sout2><delay> #	Module configuration – configuration SMS	**ALARM DELAY: 0,5s** **OUT2:CONTROLLED S15**
#<code>#CFG	Module configuration verification	**ALARM DELAY: 0,5s** **OUT2:CONTROLLED S15**
#<code>#<n>TEL #<telnumber> #[<a >#]	Telephone numbers input	**TEL1:+420602123456: A0** **TEL2: not input** **TEL3: not input** **TEL4: not input** **TEL5: not input**
#<code>#TEL #	Telephone numbers input verification	**TEL1:+420602123456: A0** **TEL2: not input** **TEL3: not input** **TEL4: not input** **TEL5: not input**
#<code>#PATRIOTON #<code>#PATRIOTOFF	Switching alert transfer ON/OFF	**PATRIOT ON (OFF)**
#<code>#<n>ON #<code>#<n>OFF #<code>#<n>IMP	Output control	**Switch n ON (OFF, IMP)**
#<code>#STATUS	Communication module status information	**Vehicle at rest (in motion)** **Alarm deactivated (activated)** **Switch 1 ON** **Switch 2 OFF** **GMT TIME:** **26.01.2005 12:16** **N:4935.7839** **E:01715.0335** **SPEED:0 km/h**
#<code>#TEST	Test	**Control test** **GMT TIME:** **26.01.2005 12:16** **N:4935.7839** **E:01715.0335** **SPEED:0 km/h**
#<code>#CODE#<code1>#	Change of the safety code	**The code is xxxx.**
#<code>#RESET	Communication module reset	**Manufacturer`s setting**

ELECTRICAL SCHEME

installation manual Patriot IV_eng.02