



Vehicle Security System GSM/SMS Pager

TYTAN[®] ***DS 512 - CAN GSM GPS***



INSTALLATION MANUAL

ver. 0.07

TYTAN DS512 CAN GPS GSM CAN-bus Vehicle Security System (VSS) and GSM-SMS Pager features

- GSM-SMS pager integrated with CAN-bus Vehicle Security System central unit,
- alarming state signalisation with SMS messages in GSM network,
- external GPS receiver (optional),
- remote (SMS) control of VSS and remote access to VSS trigger source memory,
- valet mode (service mode),
- operation mode as GSM-SMS Pager monitoring for OEM security system via CAN bus,
- operation mode as GSM-SMS Pager monitoring for any analogue security system already installed in the vehicle,
- operation mode as independent Vehicle Security System with CAN-bus connection to vehicle electronic systems is armed/disarmed with OEM remotes or SMS commands,
- VSS: signalisation if door / trunk / bonnet is open during arming (door ajar),
- VSS: signalisation if the alarm was triggered during disarming,
- VSS: CAN-bus control of hazard lights, central door locking, power windows on some vehicle models,
- VSS: additional sensors input
 - vehicle interior protection with ultrasonic motion detector (optional),
 - vehicle towing and wheel theft protection with additional tilt sensor (optional),
- VSS: arming without additional sensors,
- VSS: state of the system is stored in non-volatile memory and is saved during power-off,

GENERAL

- Tytan DS512 was designed to use in all vehicles with 12V/24V power supply system and negative ground.
- Tytan DS512 must be installed according to the manufacturer's requirements and documentation.
- It is suggested to install the DS512 only by an authorized person or company. The list of authorised installers can be obtained from manufacturer or distributor of Tytan DS512 CAN. It should be checked, if the installation certificate, delivered with the system has been filled in by the installer.
- The system is compatible with CAN-bus networks in most modern vehicles. In order to work properly, before installation, the VSS central unit has to be programmed for a given make and model of car.
- The installer must fulfil all the general requirements concerning safety at work during car service procedures.
- Before installing the DS512 the negative terminal of the battery must be disconnected. If for some reasons disconnecting the battery is impossible, during the installation the cable loom must be disconnected from VSS central unit.
- All the connections must be insulated, the wires must be protected against abrasion to prevent any short circuit the vehicles electronics.
- The installed DS512 central unit must not be exposed for contact with water, petrol, grease, oil, and other chemical substances. It is suggested to place the unit in a well hidden place inside the car, preferably under the dashboard.
- The siren should be installed in engine chamber in a place, that provides protection from extensive dirt and direct flow of water.

1. DS512 OPERATING PRINCIPLE

The DS512 is a device, that combines function of a complete Vehicle Security System (VSS) and the SMS pager.

The general purpose of DS512 is to notify up to 3 mobile phone numbers with SMS information containing status of vehicle and status of equipped security system.

The DS512, can be equipped with external GPS receiver. This allows to receive vehicle geographical position in the form of latitude and longitude. SMS notification also includes a link to online maps, which can be opened in any web browser to visualise vehicle position.

The localisation of the vehicle is set only when the alarm is triggered or if the dedicated SMS command protected by individual VSS PIN is sent to the VSS (see user manual).

The DS512 can work without alarm function (VSS) - without optical and acoustic signalisation of alarming. The device works as a SMS pager that monitors third party VSS, already installed in the vehicle.

The 4 modes of DS512 operation are described below:

DS512 operating modes:

Mode 4 - FULL ALARM - complete CAN-bus VSS with audible and visible signalisation.

DS512 is the complete vehicle security system, controlled by OEM remote, integrated with the vehicle via CAN bus.

In this mode the DS512 monitors the doors, trunk, bonnet and optional additional sensors or OEM alarm system. When the device is triggered the acoustic (siren) and visible (hazard lights) signalisation is started and a SMS notification is being sent. Moreover, triggering of OEM alarm (for example by OEM internal movement sensor) also triggers the DS512. The door, bonnet, trunk, ignition and remote control signals are read from CAN bus (in some cars bonnet and trunk can-bus signals may not be available). Siren output is negative. The hazard lights negative output can control the hazard lights switch (perimeter connection) or can control the relays of analogue connections to hazard lights bulbs. The immobilisation NC relay is controlled by negative output. The vehicle is immobilised when the VSS is armed and the ignition is switched on.

The proper wiring diagram is diagram 1.

Mode 3 - SILENT ALARM - CAN VSS without audible and visible signalisation.

The DS512 operates as in mode 4, but the audible and visible signalisation is disabled. The engine immobilisation operates as in mode 4. The appropriate wiring diagram is diagram 1, but without siren and hazard lights connection.

Mode 2 - OEM CAN-bus VSS PAGER

The DS512 works as a Pager, monitoring OEM VSS via CAN bus. Detection of alarming in the monitored VSS causes the DS512 to page up to 3 users with a SMS about alarming. There is no audible nor visible signalisation in this mode. The device does not react on opening the door or switching on the ignition as long as it does not trigger the OEM alarm. The proper wiring diagram is diagram 2.

Mode 1 - ANALOGUE PAGER

The DS512 operates as an analogue pager to any VSS installed in the vehicle. Detection of alarming in the monitored VSS causes the DS512 to notify up to 3 users with a SMS about alarming. There is no audible nor visible signalisation in this mode. The device does not react on opening the door or switching on the ignition as long as it does not trigger the OEM alarm. The information on triggering alarm is read from analogue signal. The possible triggering conditions are: positive signal NO, positive signal NC, ground signal NO, ground signal NC. The signal must be at least 1 sec. long, in order to ignore short siren chirps if the DS512 is connected to the siren circuit.

If minimal connection of just the triggering circuit is used - the proper wiring diagram is diagram 3.

Moreover, in this mode, analogue connections of DS512 can be done to ignition circuit, door signal and the VSS status signal. If these connections are done, the DS512 can give the user full status of the vehicle (door/ignition/lock state).

If the extended connection of the additional signals is used, the proper wiring diagram is diagram 4.

Remote stop / anti-hijack function.

In the countries, where the Reg. 97 ECE does not apply, in all the operating modes described above, the DS512 anti-hijack function can be set.

The anti-hijack sequence is triggered by the SMS protected by a individual VSS PIN.

The anti-hijack sequence involves optical and acoustic signalisation, and after several tens of seconds the vehicle is stopped. The immobilisation relay is active despite the status of ignition.

In order to have the acoustic and visible signalisation during anti-hijack / remote stop procedure in modes 1, 2 and 3 the siren and hazard lights connections must be done. These connections are presented in the diagram 5.

In order to have operational remote stop function in modes 1 and 2 the immobiliser relay must be connected. These connection is also presented in the diagram 5.

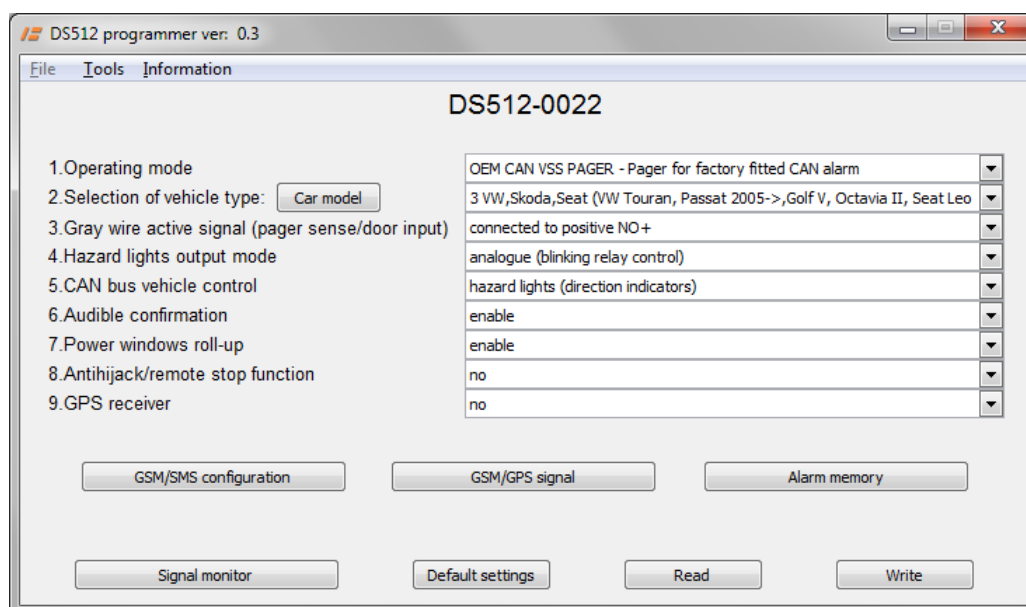
2. DS512 configuration

The DS512 will operate in the vehicle only if it has been properly configured. The configuration is made with a dedicated PC software and the mini USB cable.

The software panel has the list of programmable parameters and few buttons, described below.

- *Read* loads the configuration from DS512 and shows the settings from the device on the panel.

- *Write* saves the parameter values shown in the panel to the device.



Parameter list:

2.1. Operating mode

The parameter selects the operating mode of DS512 as described above (analogue pager / CAN-bus Pager / Silent Alarm / Full Alarm)

2.2. Selection of vehicle type

In order to operate correctly with the vehicle CAN-bus in CAN-bus based modes (2,3,4), the DS512 has to be programmed to a given vehicle model with so-called 'CAN level'. The CAN-bus level can be selected according to the table or the wiring diagram for a given vehicle. Moreover, it can be selected automatically, by choosing make and model of the vehicle from the list. The list is shown when the 'make and model' button is pressed.

2.3. Gray wire active signal (pager/door input)

In modes 3 and 4 this wire operates as an alarm triggering input, dedicated for connection of additional analogue bonnet switch. In mode 1 (pager mode) this wire operates as an alarm-sensing input dedicated for detection of alarming state.

The active signal of gray wire for all modes can be programmed. The line can sense ground or positive signal. In case of ground sense - the internal pull-up in DS512 is activated. In case of positive signal sense, the internal pull-down is activated. Moreover, the line can react on applying the signal or lack of signal, thus the NO and NC signals can be handled.

For example in NC- mode:

- the input is inactive as long as the ground signal is applied to the input.
- the input is active as long as the ground signal is not applied to the input.

2.4. Hazard lights

The recommended method of hazard lights connection is 'perimeter mode' - connection of dedicated DS512 active ground output (pin11 pink-black wire) to hazard lights switch circuit.

DS512 can also control the bulb circuits with analogue high current connection. In such case the hazard lights connection should be set to 'analogue' and additional relays controlled by pink-black wire must be used - see diagram 1.

2.5. CAN-bus vehicle control.

On some vehicles the DS512 can perform a CAN-bus control of:

- hazard lights (in this case the analogue or perimeter connection is not required),
- power door locks,
- power windows.

The information which vehicles allow for CAN bus control and which circuits can be activated is present on the vehicle list and on wiring diagrams

2.6. Audible confirmation of arming/disarming

The parameter enables acoustic signalisation of arming/disarming VSS with short siren chirps.

IMPORTANT! Audible confirmation can be enabled only in countries where the Reg. 97 does not apply. In opposite case, the homologation of DS512 as a VSS becomes invalid.

2.7. Power windows roll-up

The parameter enables power windows roll-up when the system is armed. In order to operate correctly in vehicles with CAN bus power windows control, the necessary level in parameter 5 – CAN-bus vehicle control – must be set.

2.8. Anti-hijack / remote stop enabled

The parameter enables the possibility to initiate anti-hijack sequence - execute remote vehicle stop via SMS.

IMPORTANT! anti-hijack / remote stop can be enabled only in countries where the Reg. 97 does not apply. In opposite case, the homologation of DS512 as a VSS becomes invalid.

2.9. GPS receiver

The DS512 can operate as SMS Pager without vehicle localisation or with vehicle localisation. For vehicle localisation the external GPS receiver must be connected and enabled.

3. SMS/GSM Paging parameters setup

Press the *GSM/SMS settings* button to open the configuration window. The panel allows to set: VSS PIN, number of mobile phones to notify with SMS when alarming, mobile phones numbers and information details to be placed in status SMS.

Parameter	Value
1. VSS PIN code	12345
2. Number of mobiles to page	3
3. Mobile 1 phone number	
4. Mobile 2 phone number	
5. Mobile 3 phone number	
6. ignition state in status SMS	no
7. system state in status SMS	no
8. door/trunk/bonnet state in status SMS	no

VSS PIN - is a 5 digit PIN code protecting the DS512 against unauthorised access by SMS commands. The commands are described in DS512 User manual.

Up to three mobile number phone numbers can be set to receive the SMS alarm trigger notifications from DS512. The numbers should be written in international format without the '+' or '0' at the beginning, e.g.44555778899.

The status SMS is sent when the DS512 detects an alarm and as a response to most of SMS commands.

Depending on the configuration of parameters 6,7,8, the information on ignition state, combined door/trunk/bonnet state and armed/disarmed state will or will not be included in the SMS sent from DS512.

If parameter 7 is set to 'no' the information on system status will be sent only as:

ALARM in progress! / ready / valet mode / ANTI-HIJACK in progress! / ANTI-HIJACK vehicle stopped

If it is set to 'yes', the information on system status will be more detailed:

disarmed / armed / armed w/o sensors / armed w/o trunk and sensors / ALARM in progress! / disarmed (rearming) / valet mode / ANTI-HIJACK in progress! / ANTI-HIJACK vehicle stopped

Moreover, even if the alarm is not triggered at the moment, but the alarm was triggered at least once since the vehicle was armed, the additional information will be placed in the SMS:

ALARM was triggered!

In DS512 operating modes 2,3,4, (CAN based), the recommended setting for parameters 6/7/8 is 'yes'.

In DS512 operating mode 1 (analogue pager) - diagram 4 - the setting 'yes' should be set if:

- parameter 6 (ignition) - orange wire (pin6) is connected to vehicle ignition switch circuit.
- parameter 7 (detailed status) - blue wire (pin4) is connected to the 'armed' signal of monitored VSS - the wire that is connected to GND if the VSS is armed.
- parameter 8 (door/trunk status) - blue wire from the additional sensors connector (pin5) is connected to the active ground inputs of monitored VSS as presented in diagram 4.

IMPORTANT! VSS PIN and mobile phone numbers can be programmed later by the user with a dedicated SMS command.

4. DIAGNOSTIC TOOLS

Press the *Signal Monitor* button - the panel visualising the CAN-bus and analogue input/output signals with the indicators will be opened.

LOCK	DOOR_FRONT_LEFT	GLOBAL_IGNITION	SEND_LOCK	SEND_HAZARD_LIGHTS	OUT_IMMORELAY_(pin12)	AI0_(pin9)
UNLOCK	DOOR_FRONT_RIGHT	IGNITION_(CAN)		PA_button/ultrasonic	OUT_HAZARD_(pin1)	
UNLOCKTRUNK	DOOR_REAR_LEFT	ACC_(CAN)	SEND_UNLOCK_ALL	LED	OUT_SIREN_(pin13)	DI0_(pin6)
ALARM	DOOR_REAR_RIGHT	HZD_LEFT	SEND_OPEN_TRUNK		OUT_LED_(pin10)	DI2_(pin4)
ALARM_OEM	TRUNK	HAZARD_LIGHTS				
ALARM_PAGER	BONNET_(CAN)	HZD_RIGHT	SEND_CLOSE_WIN			DI1_(pin3)
LOCK_STATE	BONNET_(switch)	STATUS1-				
LOCKwoTRUNK_STATE	DOOR/TRUNK/BONNET	STATUS3+				DI5_(pin5)

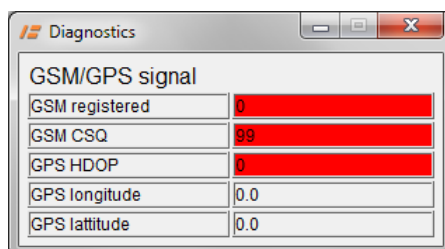
Columns 1-5 show the logic input/output signals - if the indicator lights up, it means that the signal is active.

Lamp	Description
LOCK	Locking the vehicle with OEM remote or with SMS command was detected. Locking command arms the VSS.
UNLOCK	Unlocking the vehicle with OEM remote or with SMS command was detected. Unlocking command disarms the VSS.
UNLOCKTRUNK	Trunk release with OEM remote has been detected. It disables trunk, rear door and additional sensor vehicle protection if the VSS is armed.
ALARM	The DS512 in mode 3 and 4 (operating as VSS) has detected alarm condition.
ALARM_OEM	The DS512 has detected, that OEM CAN VSS has been triggered (modes 2,3,4) .
ALARM_PAGER	The DS512 has detected, that monitored analogue VSS has been triggered (mode 1 - analogue Pager) .
LOCK_STATE	VSS system is armed / vehicle is locked.
LOCK_woTRUNK	VSS system is armed without trunk, rear door, additional sensor - the 3rd button on remote has been used.
DOOR (...)	Door is opened.
TRUNK	Trunk is opened.
BONNET (CAN)	Bonnet is opened - signal from OEM switch read from CAN-bus.
BONNET (switch)	Bonnet is opened - analogue signal read via gray wire(pin4) in modes (3 and 4).
DOOR/TRUNK/BONNET	The lamp signals if any input is triggered. If the lamp is on, the door status in SMS is sent as opened, In mode 1 (analogue pager) that lamp shows the status of monitored VSS inputs.
GLOBAL_IGNITION	The result of ignition signal - the sum of signals from CAN-bus and analogue signal (orange wire).
IGNITION (CAN)	Ignition switch signal read from CAN-bus.
ACC (CAN)	ACC (ignition switch in accessory position) signal read from CAN-bus.
HZD_LEFT, HZD_RIGHT, HAZARD LIGHTS	Direction indicators and hazard lights status.
STATUS1-	Status of additional analogue ground signal connected to blue wire (pin 4), necessary for CAN-bus connections on some vehicles (e.g. Renault Clio).
STATUS3+	Status of additional positive analogue signal connected to orange wire (pin 3), necessary for CAN-bus connections on some vehicles (e.g. Subaru Forester).
SEND LOCK, SEND UNLOCK, SEND UNLOCKTRUNK SEND HAZARD LIGHTS SEND CLOSE WIN	The lamps show that DS512 is sending CAN-bus commands to the vehicle, that control the vehicle circuits (power door locks, hazard lights, power windows).
PA button / ultrasonic	The lamp show that the PA button is pressed or the additional sensor input is triggered.
LED	The lamp repeats the LED state.

Columns 6-7 show the status of device analogue inputs / outputs.

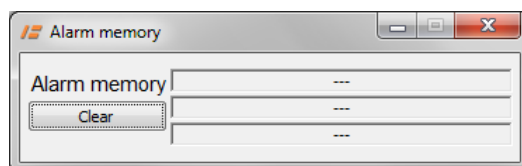
Lamp	Description
OUT_IMMORELAY	The lamp shows that the immobilisation relay output is active - connected to ground.
OUT_HAZARD	The lamp shows that the hazard lights control output is active - connected to ground
OUT_SIREN	The lamp shows that the siren control output is active - connected to ground
OUT_LED	The lamp shows that the LED control output is active - connected to ground
AI0 (pin9), DI0 (pin6), DI2 (pin4), DI1 (pin3), DI5 (pin5),	The lamps show the physical state at the given input. The lamp lights up if the voltage at the input is positive. That is why the PA button and STATUS1- inputs, which do have internal pull-up are displayed as active.

Press the *GPS/GSM Signal* button to open the panel with GSM signal strength (CSQ), the information if the GSM is registered in the GSM network, GPS signal quality (HDOP) and GPS data: latitude and longitude. The green colour shows the values which are correct for the device to operate; red colour shows the values which are insufficient for the device to operate correctly.



Parameter	Description
GSM registered	Value 1 means that the device is correctly registered in the GSM network.
GSM CSQ	GSM signal strength. Value 0 is weakest. Value 31 is strongest. Value 99 means no signal. Value >5 is sufficient
GPS HDOP	GPS signal quality. Value <35 is sufficient
GPS longitude	GPS position: longitude
GPS latitude	GPS position: latitude

Press the *Alarm Memory* button. The panel with alarm memory displays last 3 alarm trigger sources. The memory can be cleared by pressing the 'Clear' button.



5. INSTALLATION OF GPS RECEIVER

The DS512 can be equipped with external GPS receiver integrated with GPS antenna. Correct installation of GPS receiver is crucial for the precision of localisation and is determined by some contradictory condition.

Due to security reasons, the receiver should be installed in a hidden place.

The GPS receiver cannot be covered with metal objects and should 'see' as much sky as possible. The recommended installation place is the area directly under the dashboard, close to the windshield in the central part of the dashboard.

Sometimes, in the vehicles with glass covered by thin metalized layer, there is a need to install the GPS receiver outside the cabin. Please consider it is **not** waterproof.

The GPS antenna installation should be verified at the device start-up procedure with diagnostic monitor described above.

IMPORTANT! The time necessary to fix correct GPS position can reach up to few tens of seconds.

6. PREPARATION OF SIM CARD

The DS512 can work in any GSM 900/1800 network, both with pre-paid and regular SIM cards. SIM card PIN code must be disabled (recommended solution) or must be set to 6789. If the pre-paid card is used, please consider the validity period of the pre-paid SIM card and inform the user about necessity of pre-loading the card account in order to continue operation of the SMS functionality of the device.

Please note the mobile phone number of the SIM card inserted in the device would be required for SMS commands.

7. BASIC SMS COMMANDS

The DS512 can be controlled by SMS commands sent from any mobile phone. The commands are described in details in User Manual. The commands begin with 5-digit VSS PIN code (**Important!** Not to be confused with SIM card PIN!). The VSS PIN code prevents DS512 from unauthorised access. Default VSS PIN code is 12345. In this document, 2 basic commands, applicable for device testing will be shown.

DS512 Status

Basic method of testing the DS512 SMS commands functionality is to send the command that require the DS512 to respond with device status.

```
{VSS PIN} status
```

For the new device:

```
12345 status
```

The device will respond with the status SMS, thus confirming the correct DS512 mobile number and correct VSS PIN code. The DS512 sends back the SMS with information on vehicle and security system status. The information about status is sent in a full or simplified version, depending on settings configured in the device during installation.

The full version of system status is:

```
device status: {OK / ALARM was triggered!}
system:       {disarmed / armed / armed w/o sensors / armed w/o
               trunk and sensors / ALARM in progress! / disarmed
               (rearming) / valet mode / ANTI-HIJACK in progress! /
               ANTI-HIJACK vehicle stopped}
```

The simplified version of system status is:

```
device status:    {OK / ALARM was triggered!}  
system:          ALARM in progress! / ready / valet mode / ANTI-HIJACK  
                  in progress! / ANTI-HIJACK vehicle stopped}
```

The optional information in vehicle status SMS are:

```
door/trunk/bonnet: {closed / opened}  
ignition: {on / off}
```

Programming VSS PIN code, number of mobiles phones to notify and mobile phone numbers.

The command changes VSS PIN code, sets number of mobiles phones, which receive SMS with information when the alarm is triggered in the vehicle (0,1,2 or 3 mobile phones) and sets the phone numbers for these mobile phones.

```
{current VSS PIN} setgsm {new VSS PIN} {new VSS PIN} {number of mobile  
phones} {first phone number} {second phone number} {third phone number}
```

where:

<i>current VSS PIN</i>	current (old) VSS PIN or default VSS PIN (12345) in the device
<i>new VSS PIN</i>	VSS PIN which will be set as the new one
<i>number of mobile phones</i>	number of mobile phones, which receive SMS with information when the alarm is triggered in the vehicle 0-3
<i>first phone number, second phone number, third phone number</i>	mobile phone numbers which are informed about triggering the alarm in the vehicle in international format with '+' at the beginning, for example: +44xxxxxxxxx

The confirmation of the command is the SMS with information:

```
VSS PIN set: {new VSS PIN} number of mobile phones: {number of mobile  
phones} {first phone number} {second phone number} {third phone number}
```

Example:

```
12345 setgsm 54321 54321 3 +44501123456 +44502123456 +44503123456
```

sets new VSS PIN 54321, and sets 3 mobile phone numbers which will be notified if the alarm is triggered. The unit responds with SMS confirmation:

```
VSS PIN set: 54321 number of mobile phones: 3 +44501123456 +44502123456  
+44503123456
```

8. PROCEDURE OF PREPARATION THE DS512 TO WORK

Install the GPS receiver (if applicable) (chapter 5) .

Prepare SIM card (chapter 6) and insert it into SIM card slot in DS512.

Connect the DS512 to the PC, run configuration software on PC.

Proceed with the device configuration.

Connect the main connector to the device. Enable power supply. Leave the USB connected (that will start up the GPS even without alarming or localisation command)

Wait approx. 60 seconds.

During that period the device should start-up, register in GSM network and fix the GPS signal.

Use the PC software diagnostic panel to verify the installation of GPS receiver. Verify the GSM registration and signal strength with a PC software.

Another fast method of checking if the device is registered in the GSM network is to make a call to the DS512 from any mobile phone. The 'call' signal confirms that the DS512 is registered and accessible in the GSM network.

Please check operation of the DS512. Depending on operation mode check: VSS operation or detection of other VSS alarming and armed state. Please check if SMS paging works correct.

9. GIVING THE SYSTEM TO THE USER

After the system is installed and checked, the user must be informed about operation of the system, the meaning of VSS PIN code and obliged to change individual VSS PIN code, mobile phone numbers, number of mobile phones and to test operation of at least status or localisation SMS command. After programming the mobile phone numbers, the SMS Paging should be tested.

10. TECHNICAL DATA

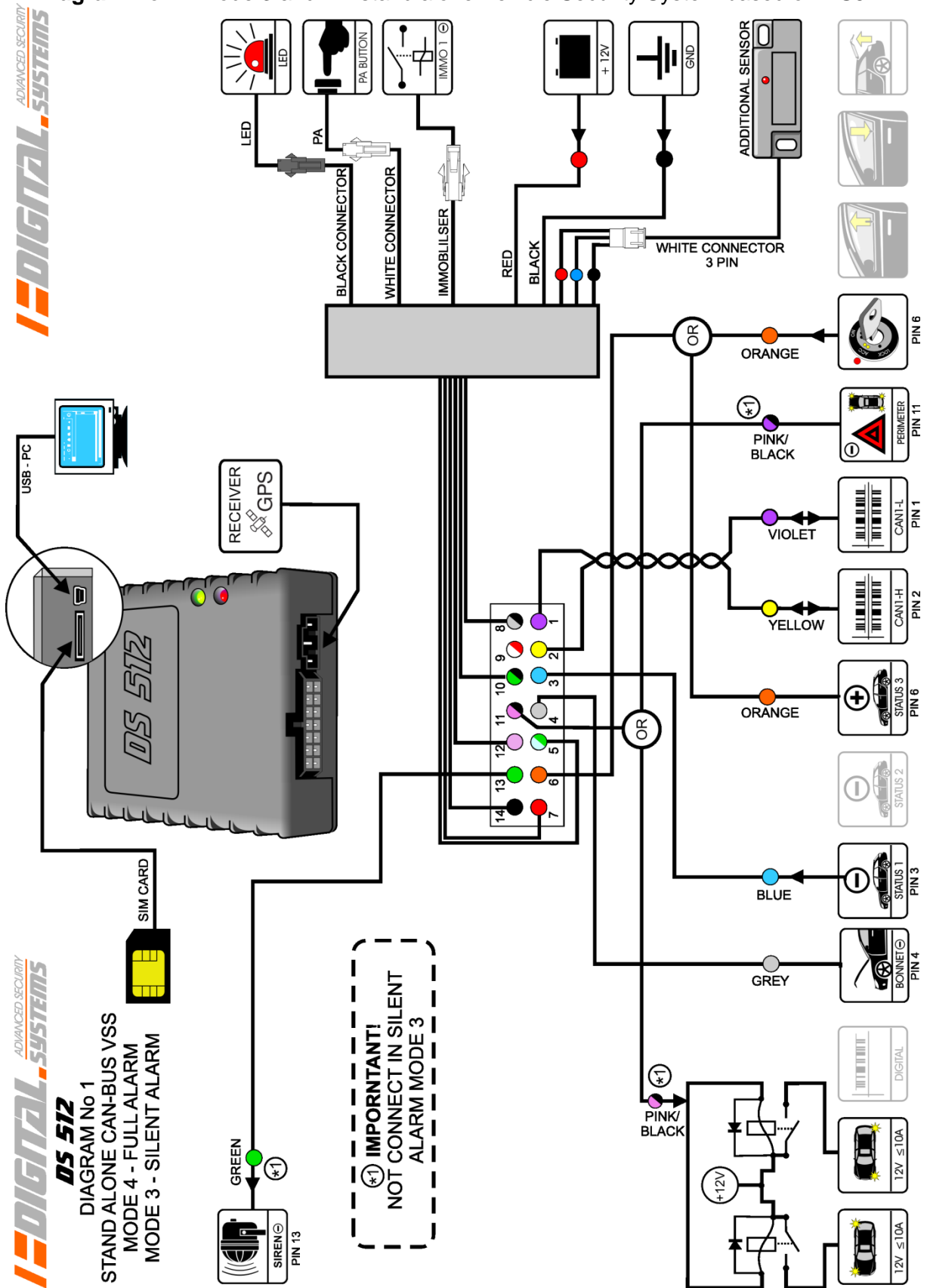
Power supply:	9-30V
Mean (300 seconds) power consumption at 12V :	16mA
Maximum sink current per single output:	500mA
Temperature range:	from -40°C to +85°C
Alarming time:	30 sec.

11. DESCRIPTION OF INPUTS/OUTPUTS

	Name	Active signal	Function
1	CANH		Vehicle CAN-bus connection required to read information on OEM remote, door status, ignition status and CAN-bus vehicle control.
2	CANL		
3	STATUS1- other VSS armed	input / ground	Modes 2, 3, 4: analogue signal required to distinguish OEM remote signal in some vehicles (e.g. Renault Clio). Mode 1: input of ground signal informing, that monitored VSS is armed.
4	Alarm triggering input (Bonnet) Alarm sensing input (pager)	Input / configurable: Ground or positive, NO or NC	Modes 2, 3, 4: Bonnet switch input, triggering alarm if in armed mode. Mode 1: Alarming detection input in pager mode, reacts on signal longer than 1s.
5	PA button / additional sensors input Other VSS input monitoring	Input / Ground	Modes 2,3,4: PA button input. Additional sensors input. Mode 1: Monitoring other VSS analogue input signals.
6	Ignition STATUS3+	Input / Positive	Modes 1,2,3,4 analogue ignition signal input. Modes 2,3,4, - on some vehicles, which do have STATUS3+ icon in installation diagram analogue signal required to distinguish information on OEM remote in some vehicles (e.g. Mazda 3, Subaru Forester).
7	Power supply		DS512 power supply 9-30V
8	Ground when Armed	Output	Line switched to ground when the DS512 is armed in modes 3 and 4 (stand alone VSS system). The line gives power supply for additional sensors.
9	Not used		
10	LED	Output / Ground (1.5A)	Switched ground control of LED. In DS512 cable loom, there is the resistor that limits the LED current.
11	Hazard lights	Output / Ground (1.5A)	Perimeter hazard lights control (hazard lights switch connection) or hazard lights relays control signal (blinking) for high-current bulb circuit connection.
12	Immobilisation relay	Output / Ground (1.5A)	Switched ground control of immobilisation NC relay. The relay is activated when the alarming starts. The relay is deactivated when the VSS is disarmed.
13	Siren	Output / Ground (1.5A)	Switched ground control of electronic siren.
14	Ground		DS512 ground

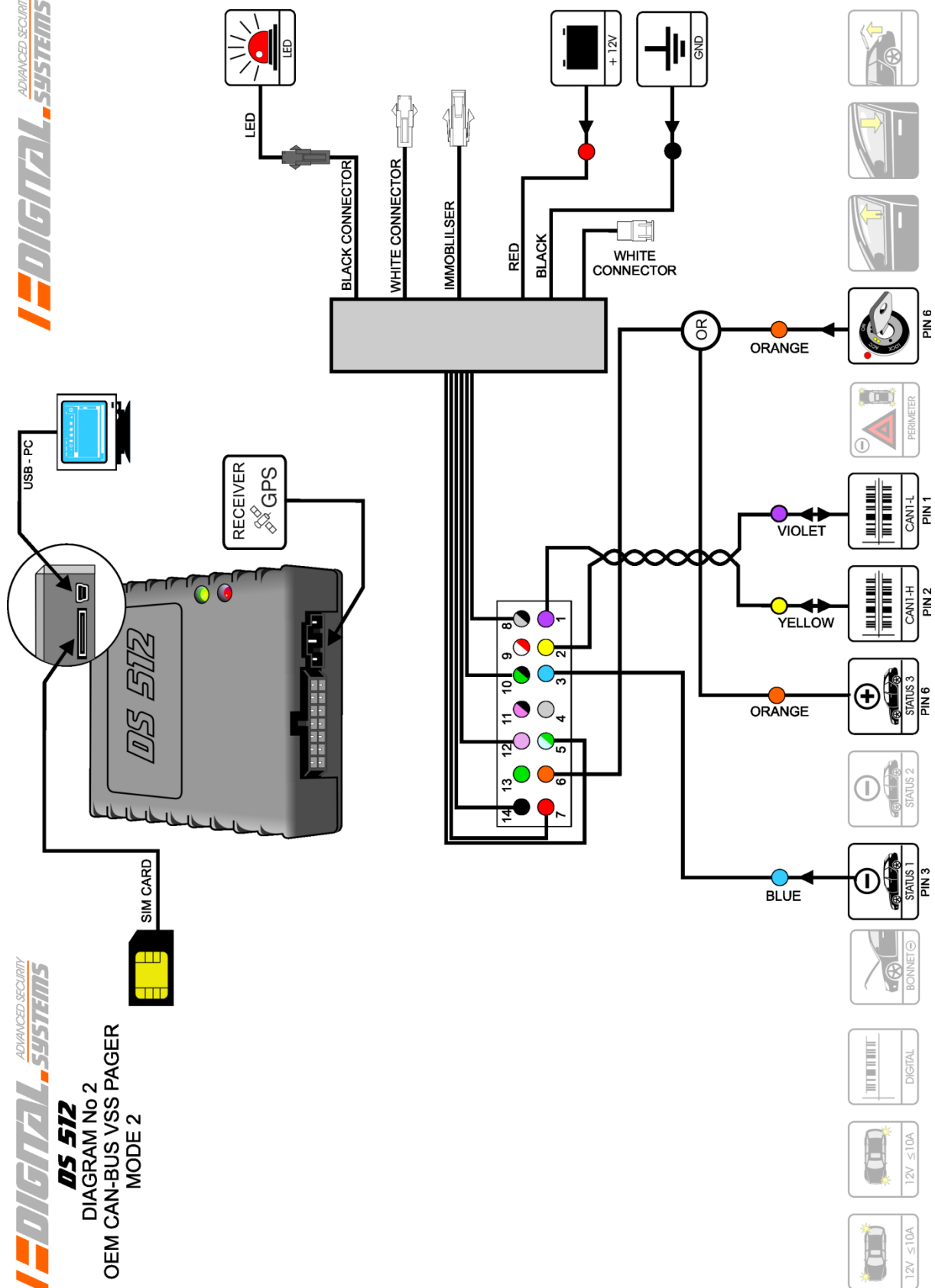
12. WIRING DIAGRAMS

Diagram No 1 - Mode 3 and 4 – stand alone Vehicle Security System based on DS512



**DIAGRAM No 2
OEM CAN-BUS VSS PAGER
MODE 2**

Diagram No 2 - Mode 2 - OEM VSS CAN Pager



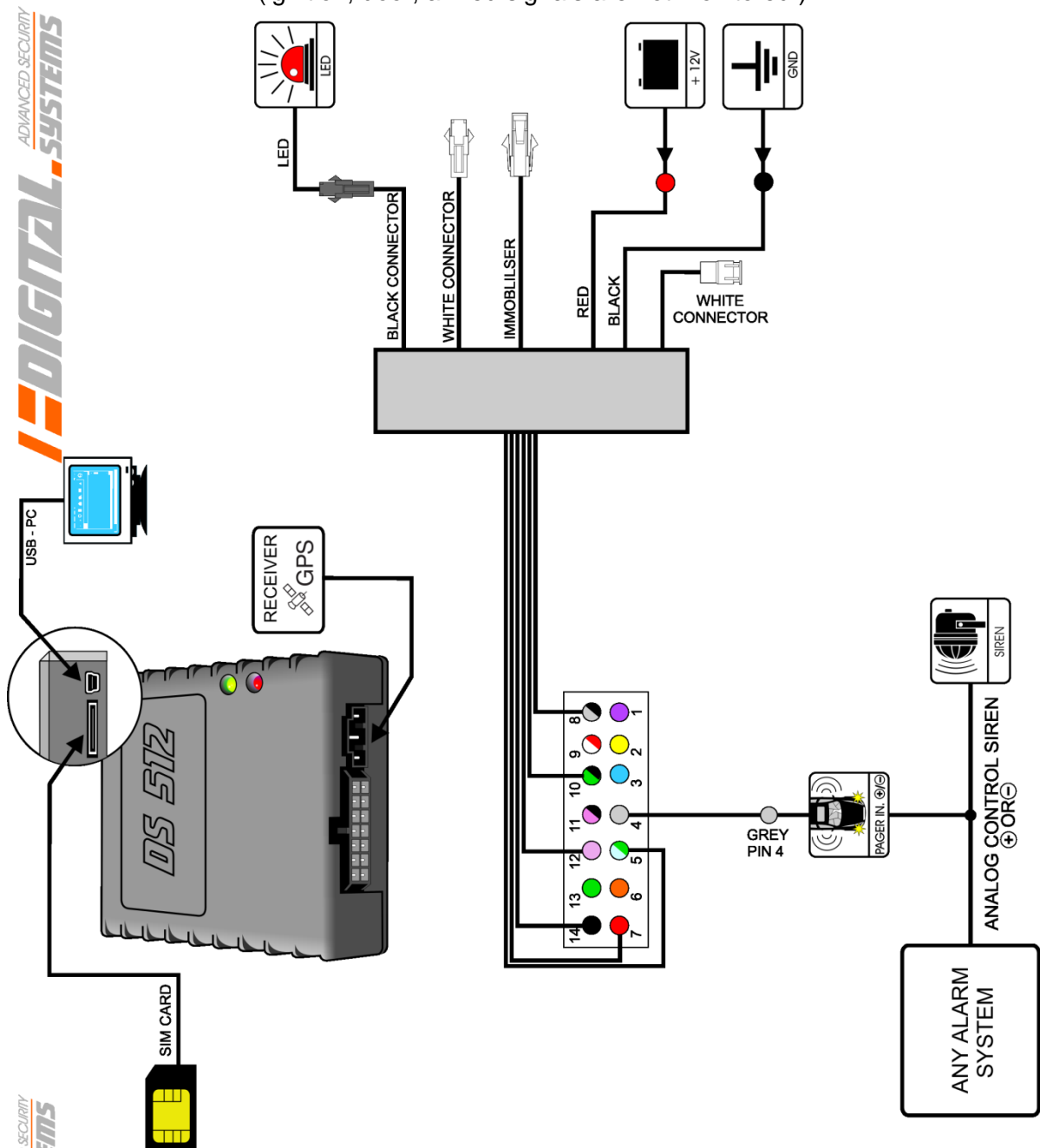


Diagram No 3 - Mode 1 - GSM Pager for any other analogue VSS
(ignition, door, armed signals are not monitored)

DS 512
DIAGRAM No 4
ANALOGUE VSS PAGER
MODE 1
 (IGNITION / DOOR /
 VSS STATUS / MONITORING)



Diagram No 5 - connections necessary for anti-hijack /remote stop function in modes 1,2,3

