

The „Pulse“ brand name compact car alarm is suitable for all cars equipped with 12V voltage and a negative ground. The CA-01 is easy to install and suitable for D.I.Y. installers.

Arming of the „Pulse“ by the ignition key is simple and convenient. If installed, arming can also be done by a hidden push button switch. The CA-01 working mode is indicated by an LED indicator.

The built-in vibration detector has a digital filter which provides a high immunity to false alarms. Its response, either a warning or alarm trigger, is selectable. A built-in current sensor will trigger the alarm if an electrical equipment is switched ON while the CA-01 is armed. The current sensor activates 10 minutes after arming. This prevents the cooling fan from triggering the alarm. A negative trigger input can be used for a hood and trunk sensor, or for any additional detector. A negative door switch trigger input provides an entrance delay and this link also works as an Automatic Dome light control output.

When an ALARM is triggered, the built-in siren will sound. It is also possible to add an optional external siren in the passenger compartment, and a wireless pager. If an external immobilization relay is installed, any unauthorized use of the car will be blocked.

Some features of the car alarm can be customized in the setting mode. Basic installation of the „Pulse“ is very simple, but it can be extended if a more advanced system is desired.

## Specifications

voltage	10 - 16VDC
consumption	stand by 10mA, max. 2A
working temperature	-40 to +125°C
instant input	negative trigger
delay door switch negative inp.	also courtesy light output
vibration detector	digital filter, Warning or Alarm
current sensor	10 min. exit delay
external siren / immobil. relay output	+12V, max. 0.8A
exit / entrance delay	30 / 15 sec. (selectable)
this product complies with E/CE/324/1/96	

## Installation

Disconnect the battery before starting the installation. Keep in mind that if your car has some memory functions, these may be erased if you disconnect the battery. No one should be inside an airbag equipped car when the car battery is being connected or disconnected. Refer to the car owners' manual before disconnecting the battery.

The CA-01 unit is suitable for engine compartment installation. It can also be installed in other locations if desired. Find a location which is not too close to any hot objects (exhaust, radiator etc.) and which is not exposed to water. Attach the unit firmly to a solid part of the car body using screws. A firm fix will assure proper performance of the built-in vibration sensor. If you drill a hole during the installation, be sure to avoid damaging any other components of the car.

Route the CA-01 wires with the electrical harness of the car. Check each connection made to ensure that it is solid and properly insulated. Use only a real crimping tool to make connections. Complete and check all wiring before switching on the power. If you do not use some wires, cut them about 10cm from the car alarm unit and fix with insulating tape to the other CA-01 wires.

## Wires

**BLACK = Grounding** - connect this wire to the original GND point in the car

**BLUE = Ignition Key Input** - connect the blue wire to the ignition key switch (+12V when ignition is ON)

**WHITE = Alarm Negative Trigger** can be used for any external sensor

**GRAY = Door Switches** input, Dome Light Control output - is a negative alarm trigger input. It also functions as the dome light control output. Connect this wire to the door switches (we recommend to have switches installed in all doors). When a door opens, and the CA-01 is armed the alarm will be triggered (after entrance delay). With the system is disarmed, opening the door turns on the interior dome light till the ignition key is switched on (max. 30 seconds)

*NOTE: The maximum load of the interior light can be 10W.*

**GREEN = External Immobilization relay or Siren** output, +12V, max. 800mA (not used in basic installation)

**YELLOW = LED indicator**, drill a 6.5mm (4/16") diameter hole in the dashboard and install the LED with its plastic holder. Connect the second end of the wire from LED to the ground

**RED = Positive Supply** - connect this red wire to a direct inlet from the positive terminal of the battery. Switch on the power after installation is completed.

## Operation

**Arming** - Switch on and off the ignition key twice within 3 seconds before you exit the car. The car alarm will start making a ticking sound. This sound indicates that you have a 30 seconds exit delay to leave the car and close all the doors. After this period the CA-01 will arm (confirmed by one siren chirp) and the LED indicator will start flashing.

If you hear **four fast siren chirps when arming**, it indicates that an input is activated; for example, a door is not closed properly. If you do not close the door, this input will be automatically disabled. The exit delay can be terminated by switching on the ignition key.

*Note: We recommend switching off the heater and air conditioner fan before arming.*

**Disarming** - After opening the car door (or after vibration detector triggering) the car alarm will start to make a ticking sound. This sound indicates that you have a 15 seconds of entrance delay (adjustable) to switch on the ignition key. Disarming is indicated by two siren chirps and the turning off of the LED. When the system is disarmed, opening the door turns on the interior dome light till the ignition key is switched on (max. 30 seconds)

If the siren chirps three times and the LED continues to flash, this indicates the Alarm Memory. The Alarm Memory informs you that the alarm was triggered since CA-01 was armed. You can see which input triggered the alarm by the LED blinking pattern (see the following table). The LED alarm memory indication is switched off automatically 1 minute after switching on the ignition key.

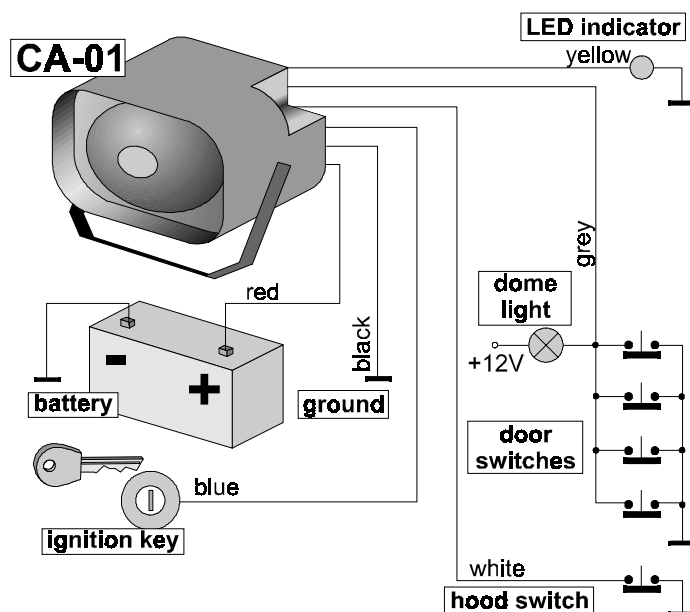
LED indicator blinking	what triggered the alarm
•• ••	door switch (delay input)
••• •••	hood switch (instant input)
•••• ••••	current consumption sensor
••••• •••••	vibration detector

**Alarm** - In alarm mode the siren sounds for 30 seconds and then the car alarm will return to the armed mode. If an immobilization relay is installed, it will block the engine (see advanced installation).

**Accidentally triggered alarm** - may be stopped by switching on the ignition key. The car alarm will disarm, but the immobilization relay will stay blocked if installed (see advanced installation).

**Maintenance** - There is no special maintenance required. We recommend to check door, hood and trunk switch functions periodically.

*Notes: Each of the detectors and trigger inputs can only trigger alarms a maximum of four times during each arming period. The built-in digital filter of the vibration detector will trigger the alarm only if multiple vibrations are detected. This provides a high immunity to false alarms. The current consumption sensor activates 10 minutes after arming, preventing the cooling fan from triggering the alarm. If the power for car alarm is switched off and then on again, the CA-01 will return to the same function it was in before the disruption in power.*



CA-01 "Pulse" basic installation

## Advanced Installation, optional functions setting

The basic installation can be extended for a more advanced system.

**An additional siren** - can be installed into the passenger compartment. Connect the positive pole of the siren (we recommend model SA-107) to the green wire of the CA-01 and the negative pole to the ground. If an alarm is triggered, the additional siren will sound for 1 minute. It can also sound for 10 minutes, depending on the immobilization duration setting. The additional siren can be combined together with the external immobilization relay (limited by maximal total current output of 800mA on the green CA-01 output) .

**A Wireless Pager** - can be used to transmit an alarm information to user. We recommend pager PG-2W or PG-3W. The green CA-01 output (+12V when alarm) is used to trigger paging (see pager instructions for more details regarding its installation).

**An Immobilization relay** - is a suitable solution for increasing your car's security. Connect the additional relay (we recommend model RA-12/30A) coil contacts between the green CA-01 output and the ground. The Normally Closed relay contact can be used to disable the engine (the starter control circuit, for example).

If an alarm is triggered, this relay will disable the selected circuit for 1 or 10 minutes (selectable). Immobilization is indicated by the LED being continuously light. There is no way to switch off the immobilization before the selected time period elapses. Pay high attention to the quality of immobilization circuit connections. Any failure in this circuit can result in a poor or dangerous car performance.

no.	siren chirps	optional function	factory default do not use ign. key to keep	you can select switching on and off the key
●●●●●●●●●●●●●●●●		setting mode	LED status ●	LED status ☀
1	●	entrance delay duration	15 seconds	10 seconds
2	●●	exit delay audible indication (ticking)	enabled	disabled
3	●●●	vibration detector reaction	Alarm	Warning
4	●●●●	vibration detector function	enabled	disabled completely
5	●●●●●	immobilization duration (+12V on green output)	1 minute	10 minutes
6	●●●●●●	current consumption detector	enabled	disabled completely
●●●●●●●●●●●●●●●●		exit of the setting mode, data is stored into the memory (EEPROM)		

**Hidden Button Arming** - if you do not want to use the ignition key for arming, install a push button switch in a hidden location. Connect the blue CA-01 input wire to this switch so that there is +12V on the input if the button is pressed. The arming logic is the same (press twice for arming, once for disarming).

*Note: If you use the hidden button for arming, disable only the starter with the immobilization relay. This will prevent an accidental immobilization when driving.*

**A Warning Function** - the vibration detector function can be switched from the alarm trigger to a warning trigger (see setting mode). If the warning function is selected, any detected vibration will result only in a short siren chirp when is CA-01 armed. The digital filter will not filter out independent vibrations.

The vibration detector can also be completely disabled in the setting mode.

### Setting mode

Optional functions can be modified in this mode. Read the following descriptions, then enter the setting mode:

- 1) disconnect the CA-01 power (red wire)
- 2) turn on the ignition key
- 3) wait 1 minute then reconnect the power
- 4) switch the ignition key off and then switch it **on and off** five times
- 5) the siren will make 16 short chirps indicating that the setting mode was entered

The car alarm will automatically offer one optional function every 3 seconds (see the following table). The number of the function (row number in the table) is indicated by number of the siren chirps.

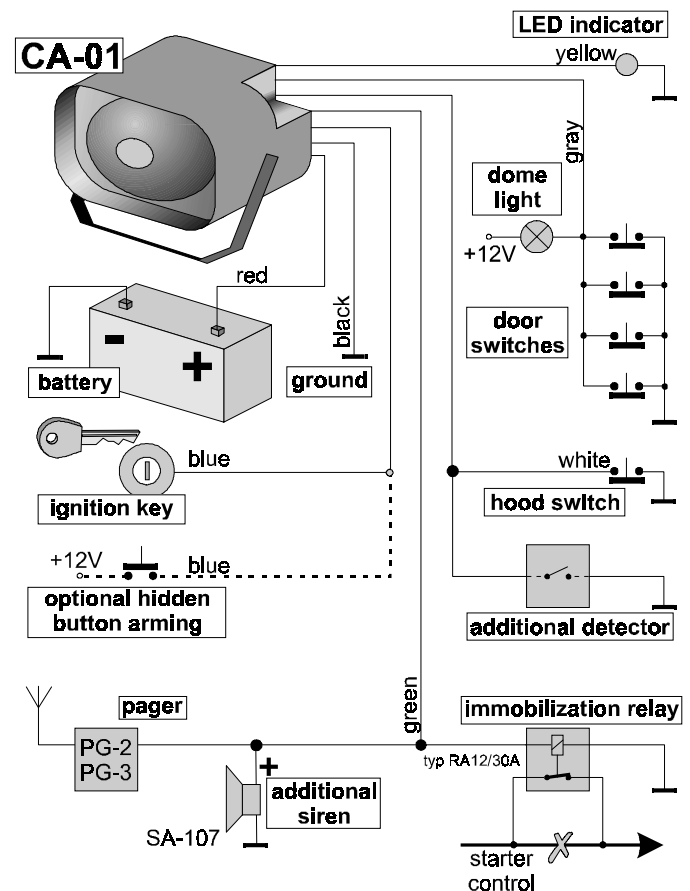
**If you want to select** the offered function, switch **on and off** the ignition key (LED goes off). If you do not want to select the offered function, wait until the CA-01 will offer the function you want to modify.

After all functions are offered, the CA-01 will close the setting mode automatically (confirmed by 16 siren chirps. All data is stored to the memory). If you do not select any offered function in the setting mode, the car alarm will return to the factory default settings.

*Note: If you switch the ignition key on for longer than 10 seconds in any offered function level, the setting mode will be terminated and no changes will be stored to the memory.*

### Vibration detector testing

If you want to test the built-in vibration detector sensitivity, perform steps no. 1, 2 and 3 of the setting mode entering (see above). After power reconnecting leave the ignition key on and you can test vibration detector now (triggering is indicated by a LED flash and a siren chirp). Switch off the ignition key for more then 10 seconds to exit testing mode.



Example of advanced installation of CA-01 "Pulse"



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