

# **INSTALLATION GUIDE**

## **Alarm Control Panel**

### **CA6 plus**

(Program Version 5.05)

**Satel**<sup>®</sup>

GDAŃSK





## WARNINGS

Due to safety reasons, alarm system should be installed by qualified personnel only.

Telephone terminals of the panel should be connected to **PSTN lines only**. Connecting to ISDN lines may lead to damage of the equipment.

In case of upgrading the PSTN line to ISDN, system owner should contact the installer.

Because alarm system may contain hazardous items, its components should be kept out of reach of unqualified personnel.

In order to avoid the risk of electric shock, read carefully this manual before proceeding to installation. Any connections should be made in deenergized state only (i.e. with power supply disconnected).

In the event of service operations consisting in fuse replacement, they must only be carried out after disconnecting the supply voltage. For the replacement, use only the fuses which have identical parameters as the original ones.

It is recommended that the manufacturer's required housings and power supply units be used .

Making any construction changes or unauthorized repairs is prohibited. This applies, in particular, to modification of assemblies and components.

### CAUTION !

It is impermissible to connect a fully discharged battery (voltage on terminals without a load less than 11V) to the alarm panel. To avoid hardware damage, fully discharged or never used battery should be charged initially using proper charger.

The batteries used in the alarm systems contain lead. The old batteries must not be thrown away, but disposed of as required by the existing regulations (European Directives 91/157/EEC and 83/86/EEC).

Latest EC declaration of conformity and product approval certificates can be downloaded from our Web site [www.satel.pl](http://www.satel.pl)



### NOTE !

The control panels with internal pulse power supply require a different approach (as compared with the previously manufactured CA-6v2 panels) during the power-up procedure. Refer to the section on connecting power supply and starting the control panel.

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**History of the manual updates** – end of manual.

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## **GENERAL DESCRIPTION OF THE CONTROL PANEL**

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The **CA-6 plus** is a new version of the so far manufactured CA-6 alarm control panel. The changes, as compared with the previous version, refer mainly to the design and technical parameters of the control panel. Its resistance to surge currents has been considerably improved and now it meets by a good margin requirements of the standards consistent with the European Union EMC Directive. It is a state-of-the-art, microprocessor-based alarm control panel, developed in accordance with the latest trends in the field of burglary and assault signaling. It is made by means of the automatic surface mount technology, with the use of subassemblies from manufacturers meeting the ISO9000 standard requirements.

The control panel is characterized by a high software flexibility, which facilitates its application for systems with special requirements, and by a number of unique solutions not encountered in other control panels of the same class.

### **Basic features:**

- operating the panel from remote LED keypads,
- remote control by means of a telephone set (selected functions) – support of the MST-1 module,
- possibility of **two-partition** operation, with completely separate alarm systems, or common zone partitions or internal partitions,
- **8 fully programmable zone inputs**, each being able to perform any of nineteen functions,
- **support of any detectors** in the following configuration:
  - normally open (NO),
  - normally closed (NC),
  - parameter (EOL) ,
  - two-parameter (2EOL/NO or 2EOL/NC),
- **5 programmable outputs**, each being able to perform any of 41 functions,
- built-in **telephone communicator** for:
  - messaging to **two monitoring stations**,
  - messaging alarm condition via **pager** systems,
  - messaging alarm condition with **voice announcement**,
  - **remote service** from a modem equipped computer
- built-in **RS-232 (TTL) interface** for direct programming of the control panel from computer,
- intelligent analysis of telephone exchange signals, which enables an alarm voice message to be sent after answering the call,
- support of NOKTON radio messaging in PC16OUT format,
- **internal clock** for automatically arming / disarming partitions with TIMER function,
- operation by **13 users** whose access codes can have different authority level, and can be assigned to one partition, or to both partitions,
- possibility of users' control by **logging in memory the code entry operation**,
- possibility to **supervise guards rounds** with TIMER function,
- nonvolatile **memory of 255 last events**, which gathers information about arming, disarming, alarms, troubles, etc., with date and time of occurrence, and panel user number,
- nonvolatile memory of all parameters and the last condition of the control panel.

Its comprehensive features and affordable price permit application of the CA-6 plus both in small and medium-size alarm systems.

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## TECHNICAL DESCRIPTION OF THE CONTROL PANEL

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### ZONES

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In its basic configuration, the CA-6 plus control panel has 8 zones: 6 on the panel mainboard and 2 in the keypad. The panel zone inputs can support any detectors in the configuration NC, NO, EOL, 2EOL/NC, 2EOL/NO. The use of two-parameter configuration enables the panel to simultaneously control the detector and its anti-tampering circuit by means of one pair of wires.

The zones (input lines) can perform the following functions in the system:

- EXIT/ENTRY
- DELAY
- INTERIOR DELAY
- INSTANT
- DAY/NIGHT
- counting
- 24H audible
- 24H AUXILIARY
- 24H SILENT
- 24H FIRE
- arming
- silent arming
- disarming
- arming/disarming
- no alarm action - to control a specific output
- delay audible
- automatic bypass arming
- perimeter

Reaction time for each zone can be programmed within 0.016 s to 4.08 s. For delayed zones, an individual time delay can be set. The zones can be selectively bypassed and/or assigned to any partition. Five event codes to be sent to the monitoring stations can be determined for each zone.

The CA-6 plus has an **additional CTL input**, which is intended for arming or disarming. It can also be used for connecting the panic, fire or emergency call button.

### OUTPUTS

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The CA-6 plus is equipped with 5 programmable outputs: 3 high-current and 2 low-current. The OUT1, OUT2 and OUT3 outputs are protected by special electronic fuses with current limiters set at 2,2A. The panel monitors presence of voltage, overload, and signal trouble conditions at these outputs. The OUT4 and OUT5 outputs (low-current, 50mA) control ground of the load.

The +KPD keypad supply output is fitted with an electronic fuse with current limiter 1.5A. All outputs are equipped with protective devices for inductive loads and pulse interference. Designation of the outputs can be adapted to the needs of the alarm system controlled by the panel. Though individual outputs differ by their design, each of them can perform one of the following functions:

- BURGLARY alarms
- FIRE/BURGLARY alarms

- FIRE alarms
- any KEYPAD ALARM
- keypad FIRE ALARM
- keypad PANIC ALARM
- keypad AUX ALARM
- keypad TAMPER ALARM
- DAY/NIGHT silent alarm and COUNTING zone violation, when it triggers no alarm
- DURESS disarming alarm
- CHIME option zone violation
- mono switch
- bi switch
- arm status
- silent arm status
- exit delay warning
- entry delay warning
- tel. usage status
- GROUND START indicator
- monitoring confirmation
- BYPASS status
- READY status
- zone violation
- telephone line fault
- 230V AC loss indicator
- low battery indicator
- power supply with load/overload monitoring
- fire power supply
- RESET power supply
- TIMER controlled output
- audible arm status
- full arm status
- arm/disarm beep
- keypad alarm
- power supply in armed state
- status (led/relay) – functions used in former Soviet Union countries
- no guard code
- service mode indicator
- low battery indicator

When restarted, the panel assigns the following functions to the outputs:

OUT1 - audible alarm (BURGLARY type, duration = 1 minute)

OUT2 - visible alarm (BURGLARY type, duration = until cleared)

OUT3 - detectors power supply

OUT4 - READY status

OUT5 - BYPASS status

Each output can have individually set cut-off time in seconds (from 1 to 99), in minutes (from 1 to 99), or LATCH type (until switched off). It is possible to determine the output polarity in active state (whether +12V or 0V on the load), and whether it is to work in pulsating or continuous mode.



Individual outputs can be assigned to particular zones, partitions, or the system as a whole.

If the system includes a **"24H Fire"** zone and the "fire detectors power supply" function is assigned to any output, the control panel automatically enables an **alarm verification mechanism**. The first violation of the fire zone will activate keypad alarm signaling and start the alarm verification cycle. The next violation, occurring in the verification phase, will trigger alarm on the fire alarm outputs, in the keypad, and will send an alarm code to the monitoring station.

## KEYPADS

The keypads are designed for operating and programming the system (or a partition).

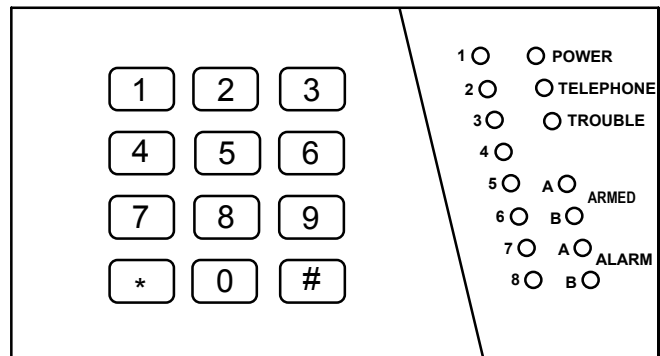
The keypad operating mode is set when programming the panel. It is possible to disable some of its functions (e.g. the quick arming by pressing in turn the [0] and [#] keys), and determine what audible signals are to be provided by the keypad.

It is possible to signal the exit delay or entry delay time, trouble, violation of a CHIME option zone, violation of a DAY/NIGHT zone, alarm. You can also disable the signaling of key depression and confirmation of the function performed.

The basic information on the system state is provided by means of light emitting diodes. They present the state of zones and partitions (armed, alarm), as well as information on the status of power supply and telephone line, as well as on troubles found.

The keypad has an address, which makes difficult replacement or connection of another keypad, an individual anti-tampering contact and two zones, which operate identically as the zone inputs of the control panel mainboard. The data concerning address, anti-tampering contact status and zone status, are sent to the control panel together with keypad data.

Provision is made for connecting several keypads in parallel (which does not increase the number of control panel zones).



## ACCESS CODES AND AUTHORITY LEVELS

The CA-6 plus panel can store in memory **13 access codes** (4 to 6 digit long), with different authority levels. The codes are associated with the partitions they are assigned to. The control panel has a MASTER code initialized when restarting with the 1234 settings. The master code cannot be deleted, however it can be changed. It provides access to all user functions.

The master code user (User 0) can add new users, assigning various authority levels to them and determining which partition is controlled by the code. The code authority level defines which functions of the control panel are accessible by using this code, and which are not.

New users (new codes) are automatically numbered by the control panel as they are entered. This makes it possible to distinguish, who and when operated the control panel, as the user (code) number is stored in the memory of events along with the command given.

Deletion of the code will not cause renumbering of the other users' access codes. Whenever a new user is added, his code will replace the one left by the deleted user.

Individual users may have the following authority levels:

- 1 - accessible **all functions**, except creating and deleting users,
- 2 - accessible **arming and disarming, change of access code**,
- 3 - accessible **arming**, while **disarming is only possible when the system was armed with the same access code**,
- 4 - **code trap**: it arms and disarms the system, but disarming sends a DURESS ("disarmed under duress") message to the monitoring station
- 5 - activates the MONO SWITCH output, **its use is recorded in the event memory**, can serve as a guard code,
- 6 - changes the state of BI SWITCH output,
- 7 - **partial arming** - the code arms the system, simultaneously bypassing a group of zones (specified by the installer in service functions), otherwise the code provides the same features as that with authority level 2,
- 8 - accessible **arming and disarming, without possibility to change own access code**,
- 9 - accessible **arming only**,
- 0 - accessible **alarm clearing only**, the code does not arm / disarm the system.

Additionally, each access code is assigned to a partition. The code can be assigned to one or to both partitions. Thus, it is possible to arm both partitions with one access code.

## **PARTITIONS**

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The CA-6 plus permits creating of two partitions to which any outputs, telephone numbers and pager messages can be assigned, and thus enables two alarm systems to be built on the basis of one CA-6 plus control panel. The partitions can be controlled from a keypad by means of access codes assigned to the partitions (as well as control zones). Both partitions can be controlled at the same time.

A partition will be created when it is assigned at least one zone. The zones assigned to both partitions are armed only when both partitions are in the armed mode.

Because the signaling devices connected to the outputs can be activated by selected zones, the assignment of zones to partitions will define which codes can clear alarm on particular signaling devices.

## **MONITORING**

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The CA-6 plus control panel can transmit information about the system (partition) status to one or two monitoring stations. Communication with the monitoring stations takes place irrespective of the voice messaging and the alphanumeric messaging to paging systems. It has a priority. In case problems occur with getting connected to the station, the control panel will suspend dialing the station number for 60 seconds and, if the message is also to be transmitted by the dialer, it will make the line available to the dialer.

There are a few ways of transmitting information to the monitoring stations:

- **Reporting to one station.**
- **Reporting to Station 1, and if unavailable - to Station 2** (e.g., when the station has two telephone numbers). If this is the case, all events are reported, irrespective of which station was reached by the control panel.

- **Reporting to both stations with event sorting** - depending on what event occurred in the system, for example, information on alarms to Station 1, and information on troubles to Station 2 (this mode is useful where the station serves many subscribers and it is necessary that the number likely to receive most vital information be busy as little as possible). In this mode, during control panel programming, you can determine which information is to be sent to which station.
- **Reporting to both stations:** Station 1 first, then Station 2. This mode is reached by assigning the same event to both stations.

It is possible to send information on events related to zones, partitions, as well as system events. The event codes for both stations are the same. It is possible to define how the events are to be split between the two stations. Information can be transmitted to the stations in one of fifteen formats (including Contact ID).

Because of analysis of commutation signals (algorithm ToneLOGIC), the CA-6 plus panel controls the process of establishing connection with the station, which in case of the line being frequently busy considerably reduces the time between occurrence of the event and sending information to the monitoring station. As dialing retries are made immediately after detecting the busy signal, the connection is established many times faster than with the equipment which waits for one specific signal for a predetermined period of time and only redials upon detecting that that signal has not occurred .

## **DIALER**

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The CA-6 plus control panel is equipped with a telephone dialer, which enables an alarm voice message to be transmitted. The message is stored in an external synthesizer. The control panel directly interfaces with the SATEL voice synthesizer type SM-2.

The CA-6 plus allows programming of four telephone numbers, 16 characters each. The numbers can be individually assigned to partitions, or, alternatively, one number can be assigned to both partitions. As the control panel is capable of establishing connections with paging systems, each number can be assigned one of the two text messages, or a voice message from the synthesizer.

During the procedure of connection setup, the panel controls signals from the telephone line (algorithm ToneLOGIC). Hence, it can recognize that the call is answered, irrespective of the type of telephone exchange. In order to enhance the efficiency of messaging, it is possible to increase the number of calling queues.

Messaging can be carried on until successful. It is also possible to determine the maximum number of retries (from 1 to 9), after which the panel stops dialing the number for which connection cannot be established (no answer, permanently busy, etc.). When waiting for the dial tone during dialing (code D, when the control panel is connected to an extension line and is trying to get the outside line), detecting the busy signal does not decrease the counter of queues and attempts.

The control panel dialer function can answer the calls and give information on the system state with a voice message (if one hour has not elapsed yet after the alarm) or with special signals (one beep a second if there was no alarm, or five short beeps every second if one hour has elapsed from the alarm).

## **REMOTE PROGRAMMING - DOWNLOADING**

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In order to facilitate programming, the CA-6 plus panel is equipped with a DOWNLOADING mechanism, which enables computer to be used for programming and monitoring of the alarm system.

The programming can be performed directly from the RS-232 port of the computer through the **RS port** of the control panel (TTL standard signals), or by means of a modem, through the TIP and RING terminals of telephone line.

Interaction with the computer by means of a **modem** can be effected in two ways: in a *remote mode* (through the telephone line) or in a *local mode*. In both cases the **computer must be equipped with a modem**. The local mode can be used after connecting the modem directly to the TIP and RING telephone terminals on the control panel (see: Drawing 12).

The **DLOAD10** program, which is delivered with the control panel, enables:

- downloading (reading) all control panel parameters,
- uploading (writing) new parameters to the control panel,
- downloading (reading) the system event log,
- ONLINE operation.

In the **ONLINE** mode, the computer displays current information on the system state, including zone violations, active outputs, control panel clock, and selected partition state. Provision is made for controlling the system in the same way as with a LED keypad. The computer screen keypad works in parallel with the real keypads in partitions, therefore commands for all partitions can be given from one place. The ONLINE mode also permits downloading troubles and programming the clock .

Communication through the telephone line can be initialized in three modes:

1. The computer calls the control panel, which after answering the call exchanges handshake signals with the computer. When they are correct, the panel confirms acceptance of the remote programming command, hangs up and calls back to the computer using a number preprogrammed in the control panel. Prior to calling the computer back, the panel notifies the monitoring station that the programming has started.
2. The computer calls the control panel and, after the handshake, the control panel immediately proceeds to the exchange of data. This simplified mode of establishing communication is reached when the computer telephone number is not entered in the control panel. Notification of the monitoring station will take place after communication with the computer is over.
3. Establishing of communication from the control panel by calling the function 0 by the partition master user. The control panel first notifies the monitoring station that the programming has started (when monitoring is active), then it dials the computer telephone number.

Initialization of communication can be disabled from the computer.

In order to reduce the cost of telephone connections, multiple suspension of the transmission is possible. At the next connection, the control panel does not inform the monitoring station of remote programming. Only after receiving the command to end the communication, a message on completing the remote programming is sent to the station. When the communication is suspended from the computer, the control panel is waiting for a call from the computer for four hours even when the functions of automatically answering the computer call are disabled. When the communication is ended with the "end" command instead of "suspend", the information on ending the communication is entered into the event log and sent to the monitoring station after four hours.

As the control panel is only accessible to the service, a number of protective devices has been provided to prevent hacking of the system and change of any data by unauthorized

persons. All the data exchanges are authorized by changing the access codes and the data are encoded.

**The program does not download or change the users' access codes - they are only accessible through the user functions from keypads.**

The DOWNLOADING can be particularly helpful to the installation firms which are engaged in servicing many alarm systems. Then the user suggested inspections and modifications of software will not necessarily require troublesome and costly traveling - they will be carried out by means of a computer through the telephone line. Such a method of customer service and technical control of the customer systems will allow creation of the alarm equipment services at an advanced and professional level.

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## **OPERATING THE CONTROL PANEL**

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Everyday operating of the system comes down to arming and disarming, clearing alarms, if any, and downloading the system state. What you are only required to know is the access code.

### **ARMING**

---

Arming the system is only possible when the system (partition) does not signal any alarm (the corresponding ALARM LED is off). If there was an alarm, the only function to be accepted by the control panel would be alarm clearing.

In order to arm the system, it is sufficient to enter the access code and press the [#] key. If the code is correct and the keystroke is acoustically signaled in the keypad, the control panel will acknowledge acceptance of the command with three short beeps. The armed mode will be on in those partitions to which the access code is assigned. At the same time the ARMED LEDs will start blinking.

If, despite entering a correct access code, the control panel will not arm the system, this will mean violation of the zones which are not to be violated when activating the armed mode. Such a situation will be signaled with three long beeps by the control panel. If this is the case, you must wait until all zones are accessible and then rearm the system. If one of the zones remains violated all the time because of a detector trouble, you can arm the system after bypassing that zone (function 4).

Provision is made for, so-called, „**quick arming**” from the keypad without entering the user access code (pressing in turn the [1][#] keys will arm partition 1, [2][#] - partition 2 or [0][#] - the whole system, unless these functions are disabled), or by pressing the quick arming button (provided the system is fitted with such a button, connected to the arming zone). Arming by the button will take place irrespective of whether any detectors are violated or not .

### **DISARMING AND ALARM CLEARING**

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If the control panel is in the armed mode or signals an alarm, entering the access code confirmed by the [#] key will disarm the system or clear the alarm.

If the access code is wrong, or if it does not authorize the user for disarming the system (the access codes with authority level 3, when the system was disarmed by another user, and the access codes with authority level 9, intended for arming only), the control panel will fail to perform the arming / alarm clearing command.

Using the access code with authority level 0 will clear the alarm without disarming the control panel (or a partition).

When clearing an alarm, switched off are only those signals which may be activated by zones of the partition the access code is assigned to.

## USER FUNCTIONS

If the control panel is not armed and is not signaling any alarm, users with an appropriate authority level can access several functions useful in everyday operation of the alarm system. Additionally, two of the mentioned functions (7 and 8) are also accessible when the control panel is armed or alarming. The user functions are activated by entering the user access code and confirming it with the [\*] key (and not the [#] key as was the case with arming/disarming the system and clearing the alarm). The panel confirms the operation with the POWER, PHONE and TROUBLE LEDs blinking simultaneously. Then, press the key with the selected function number:

- |                                     |                |
|-------------------------------------|----------------|
| • access code change                | [ CODE ][*][1] |
| • new user (new code)               | [ CODE ][*][2] |
| • delete user (code)                | [ CODE ][*][3] |
| • bypassing panel zones (partition) | [ CODE ][*][4] |
| • switch on silent armed mode       | [ CODE ][*][5] |
| • real-time clock programming       | [ CODE ][*][6] |
| • MONO switch on                    | [ CODE ][*][7] |
| • BI switch on/off                  | [ CODE ][*][8] |
| • power supply reset                | [ CODE ][*][9] |
| • DOWNLOADING function start        | [ CODE ][*][0] |

### NOTES:

- *The functions [CODE][\*][7] and [CODE][\*][8] are always accessible, irrespective of whether the panel is armed or not.*
- *The functions [CODE][\*][2] and [CODE][\*][3] are only accessible to the master user.*

To activate the user functions, enter the **user access code** and confirm it with the [\*] key (not [#] as for arming or disarming of the system). This will be confirmed by the POWER, TELEPHONE, TROUBLE LEDs blinking simultaneously. Then, press a key with selected function number.

### Access Code Change - [ CODE ][\*][1]

The function is accessible to the users with authority levels MASTER, 1, 2, 3 and 7. It allows the user to change his access code for another one.

When entering a new user, the master user assigns him any access code (using function 2). As the user access code should be known to the particular user only, the new user can change his access code using function 1.

The master user (MASTER authority level) is set by the control panel during restart procedure (FS110) at [1234].

#### EXAMPLE:

- changing the access code from [1234] to [7890]
- [1234] [\*] - activate the "user functions" mode, which will be acknowledged with one short beep and blinking of POWER, TELEPHONE, TROUBLE LEDs.
- [1] - call the "change access code" function, which will be acknowledged with two short beeps
- [7890] [#] - enter the new access code and confirm it, which will be acknowledged with four short and one long beeps.

**New User - [ CODE ][\*][2]**

The master user can add new users to the system, assigning them an access code to determine their appropriate authority level and specify the partition it belongs to. Thus, he decides to what extent the other users are authorized to operate the alarm system (see paragraph **ACCESS CODES AND AUTHORITY LEVELS**). As new users are added, they will be automatically assigned consecutive numbers by the control panel. The number of the user just being programmed is indicated by blinking of one of keypad LEDs. The system can include up to 12 users (except for the MASTER user).

The user number (together with the command) is stored by the control panel in the event log. It can also be transmitted in the event code to the monitoring station.

After calling the function, the panel waits for entry of the new user code, followed by the authority level number and the partition assignment number (options and meanings of particular digits are described below).

**An access code can be assigned the following authority levels:**

- 1 - the user can arm / disarm the system (partition), bypass the zones and use all functions, except for adding new users or deleting the existing ones (user functions \*2, \*3),
- 2 - the user can arm / disarm the system (partition) and change his own access code,
- 3 - the user can arm the system, but disarming is only possible when the system was armed by the same code,
- 4 - the user can arm / disarm the system (partition), but on disarming a "disarmed under duress" message will be sent to the monitoring station (DURESS FUNCTION),
- 5 - access code with this authority level activates the SWITCH MONO type output,
- 6 - access code with this authority level changes the state of SWITCH BI type output ,
- 7 - partial arming - the code arms the system and simultaneously bypasses a group of zones (determined by the installer in service functions), otherwise it provides the same authority level as the level 2 code,
- 8 - the user can arm / disarm the system without the possibility to change his own access code,
- 9 - the user can only arm the system,
- 0 - the user can only clear an alarm.

**Partition assignment takes place on entering the following numbers:**

- 1 - access code for first partition (A),
- 2 - access code for second partition (B),
- 3 - access code for both partitions (global).

**NOTES:**

- *If the function is terminated with the [#] key without any partition assignment number, the panel will assign the code (authority level 1) for the first partition.*
- *The access code types 5 and 6 can be used in the following way:*
  1. *In the basic mode of user functions ([CODE][\*]7 or [CODE][\*]8), which allows multiple control of single outputs (see the description of user functions).*
  2. *In the mode used in previous versions of the control panel (i.e. [CODE][#]), which simultaneously controlled all the outputs of a given type belonging to the partition the particular code was assigned to.*

3. *Using the authority 5 level code or calling the function 7 is recorded in the event memory as „Entry/Exit (guard rounds)”.*
4. *To make the control possible, there must be conformity between the access code type, output type, and the partition assignment.*

**EXAMPLE:**

- creating a new user with the access code 2323, giving him the authority level 1 and assigning him to the first partition (MASTER code =1234)
- [1234] [\*] - calling the "user functions" mode by the MASTER user, acknowledged with one short beep and blinking of POWER, TELEPHONE, TROUBLE LEDs.
- [2] - calling the "create new user" function, the blinking diode indicates the new user number.
- [2323] [#] - entering new user access code, acknowledged with three short beeps
- [1] - assignment of an authority level to the new user
- [1] - assignment to the first partition; end of the function is signaled by four short beeps and a long one.

**Delete Code - [ CODE ][\*][3]**

This function is used for deleting the access codes of existing users and is only available to the MASTER user.

**EXAMPLE:**

- deleting the third user's access code (MASTER code =1234)
- [1234] [\*] - activating the "user functions" mode by the MASTER user,
- [3] - calling the "delete user code" function, illuminated zone LEDs indicate the partition users' numbers
- [3] - selecting the code to delete, the LED of chosen code starts blinking
- [#] - deletion of the selected user code; end of the function is signaled by four short beeps and a long one.

After entering the deleted user access code, the panel waits for confirmation that the user is really to be deleted. If not, press [\*], if yes, press [#].

**Zone Bypassing - [ CODE ][\*][4]**

The master user and a user with authority level 1 can bypass the zones assigned to their partition. It is possible to bypass the zones which are not armed. With the zones bypassed, their corresponding LEDs are blinking. The zones remain bypassed until the next disarming of the system, or until they are enabled with the same function.

**EXAMPLE:**

- bypassing the zones 3, 5 (MASTER access code =1234)
- [1234] [\*] - activating the "user functions" mode by the MASTER user,
- [4] - calling the "zone bypass" function
- [3] [5] - selecting the zone numbers 3 and 5; acceptance of each number will be acknowledged by the panel with two short beeps.
- [#] - confirming the data entered and, simultaneously, exiting the function programming.

With the function active, on entering a zone number, the control panel signals bypassing the zone with two beeps, and enabling the zone with one. Two long beeps signal that the zone belongs to another partition, or is armed and cannot be bypassed.



### Silent Armed Mode - [ CODE ][\*][5]

The master user and a user with authority level 1 can activate the, so-called, silent armed mode. This kind of armed mode automatically bypasses some of the partition zones (which are indicated by the installer in service functions), and thus makes possible staying in the building.

In the silent armed mode, the control panel signals alarms in the keypads and sends alarm codes to the monitoring station. However, there is neither activation of signaling devices connected to the alarm zones, nor telephone messaging.

#### EXAMPLE:

- activating the silent armed mode (MASTER code =1234)
- [1234] [\*] - activating the "user functions" mode by the MASTER user,
- [5] - calling the "partition silent armed mode" function. The panel will acknowledge acceptance of the function with three short beeps, then it will start counting the exit delay in partitions depending on the access code used (corresponding ARMED LEDs will start blinking). After completion of the exit delay countdown, the ARMED LEDs will be permanently on.

The silent armed mode deactivation is performed in the same way as in the ordinary armed mode.

### Real Time Clock Programming - [ CODE ][\*][6]

The master user and users with authority level 1 can independently change setting of the panel clock. The programming procedure is as follows:

- HOURS, MINUTES, confirmation ([H][H][M][M][#]),
- DAY, MONTH - confirmation ([D][D][M][M][#]),
- YEAR - confirmation ([R][R][R][R][#]).

It is possible to exit the function earlier after programming by a double confirmation ([#][#])

#### EXAMPLE:

- programming the time and date = 08:45, 10 July 2000 (MASTER code =1234)
- [1234] [\*] - activating the "user functions" mode by the MASTER user,
- [6] - calling the "clock programming" function
- [0845] [#] - entering the time acknowledged by the control panel with three short beeps
- [1007] [#] - entering the date acknowledged with three short beeps
- [2000] [#] - entering the year acknowledged with four short and one long beeps, with simultaneous exit from the programmed function.

### MONO SWITCH On - [CODE][\*][7]

If the system includes a MONO SWITCH type output, it can be switched on by using the function 7. The output remains active for the time preprogrammed by the installer, then it turns off.

This function can, for example, activate electric locks, bells, signaling lamps or any other devices.

After calling the function, the control panel generates two short beeps and waits for the key with output number (1-5) to be pressed. After one-time calling of the function, it is possible to repeatedly control the same zone or various zones of the „MONO switch” type. The correctly performed control is confirmed by four short and one long beeps, while the refusal of control - with two long beeps. The control panel can refuse to perform the control, when the output is of a different type than the „mono switch”, or belongs to another partition. Pressing the [#] or [\*] key ends the function.

The function is automatically terminated by the panel if none of the outputs is of the „MONO switch” type, or if no key is pressed in the keypad for 40 seconds.

The function is available to the master user and a user with authority level 1 and 5.

**EXAMPLE:** consecutive control of outputs 4, 5, 4 (master code=1234)  
 [1234] [\*] - activating the "user functions" mode by the MASTER user  
 [7] - calling the "MONO SWITCH On" function (two short beeps)  
 [4] - monostable release of output 4 confirmed by four short and one long beeps  
 [5] - monostable release of output 5 confirmed by four short and one long beeps  
 [4] - repeated monostable release of output 4 (four short and one long beeps)  
 [#] - end of function (four short beeps and a long one)

### **BI SWITCH On/Off - [CODE][\*][8]**

The function is used to change the state of a BI SWITCH type output of the control panel - the first calling of the function activates the given output, while the second deactivates it. The function can be used for switching on the outside lighting or any electrical equipment.

Having called the function, the control panel generates two short beeps and waits for pressing the key with the output number. After one-time calling of the function, it is possible to repeatedly control the same zone or various zones of the „BI switch” type. Activation of the output is confirmed by four short and one long beeps, and its deactivation - with three short beeps. Refusal of control is signaled with two long beeps. The control panel may refuse control, when the output is of a different type than the „BI switch”, or belongs to another partition. Pressing the [#] or [\*] key ends the function. The function is automatically terminated by the panel if none of the outputs is of the „BI switch” type, or no key is pressed in the keypad for 40 seconds.

The function is available to the master user and a user with authority level 1 and 6.

### **Power Supply RESET - [ CODE ][\*][9]**

This function is intended for a temporary disconnection of power supply from the power supply outputs which react to the RESET function. Such outputs are used for powering the detectors equipped with individual violation memory which is cleared by shutting down power supply. For example, smoke detectors and broken glass detectors have such a design.

The function can be called by the master user and a user with authority level 1.

**EXAMPLE:**  
 calling the power supply RESET function (MASTER code =1234)  
 [1234] [\*] - activating the "user functions" mode by the MASTER user,  
 [9] - calling the "power supply RESET" function, acknowledged by four short and one long beeps.

### **Start DOWNLOADING - [ CODE ][\*][0]**

This function can be activated by the master user and a user with authority level 1. It starts the remote programming of the control panel via a telephone.

The function enables DOWNLOADING when the control panel capability of answering the computer telephone calls is disabled. On activating the function, the panel will notify the monitoring station that remote programming is on (when monitoring is active), and then it will establish connection with the computer. After establishing communication, the data exchange follows. The further control of the DOWNLOAD function will be taken over by the computer and service.

**EXAMPLE:**

establishing communication with computer (MASTER code =1234)

[1234] [\*] - activating the "user functions" mode by the MASTER user,

[0] - calling the "start DOWNLOADING" function, acknowledged by four short and one long beeps.

**NOTE:**

*If the function, when called by an authorized user, is not accepted and confirmed by the control panel (two long beeps), this will mean that the panel is already in the telephone programming mode and is waiting for the computer to answer the call (or that the computer telephone number has not been programmed in the service function FS 4).*

## **ONE-TOUCH ACCESS USER FUNCTIONS**

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Except for the functions available after entering an access code with appropriate authority level, the CA-6 plus control panel has also some functions which are available after holding down a corresponding key on the keypad. The control panel accepts this function only when it is not waiting for consecutive keys to be pressed (i.e. at the moment of pressing the first key after a longer pause - about 40 seconds from the last keystroke, or immediately after the canceling key [\*]). The possibility to activate the function in such a mode can be recognized by that when the function key is pressed, the panel will not acknowledge the key right after its depression, but after abt. 3 seconds it will acknowledge calling the function.

### **ALARM MEMORY REVIEW - [5]**

When this function is called, the POWER, TELEPHONE, TROUBLE LEDs will go on and the corresponding ALARM diode (function signal) will start blinking. Also, the diode corresponding to the zone with the most recent alarm condition will light up. The detector zone alarms are indicated by steady light, the 2EOL detector tamper alarms - with flashing light.

Pressing any key (except [\*], which can be used for quickly exiting the memory review) will display the previous alarms down to the end of the memory of events.

The function also shows alarms not related to the zones (e.g., triggered from the keypad). They are signaled in such a way that one of the LEDs 1 to 5 is blinking - indicating the type of alarm, while the other LEDs 1 to 8 are steadily on.

The diodes have the following meanings:

- 1 - keypad activated fire alarm
- 2 - keypad activated auxiliary alarm
- 3 - keypad activated panic alarm
- 4 - keypad tamper alarm
- 5 - 3 wrong access codes alarm

### **TROUBLE MEMORY REVIEW - [6]**

This function allows the user to reconstruct a trouble from the panel memory log of 255 events. On activating the function the POWER and TELEPHONE diodes will go on, and the TROUBLE diode will start blinking. At the same time the LED with the line number will go on, according to the following trouble conditions:

- 1 - OUT 1 output trouble
- 2 - OUT 2 output trouble
- 3 - OUT 3 output trouble

- 4 - 230V AC loss
- 5 - battery trouble
- 6 - keypad power supply trouble
- 7 - clock loss
- 8 - monitoring trouble

A ARMED - telephone line trouble - no voltage on the line

B ARMED - telephone line trouble - busy signal on lifting the handset

A ALARM - telephone line trouble - no signal on lifting the handset

B ALARM - memory error (processor system trouble)

The previous troubles can be displayed by pressing any key (except [\*]), much in the same way as when reviewing the alarm memory log.

**Output troubles** - no load (e.g. siren wires cut off), or overload (installation short-circuit) - usually requires service intervention.

**Clock loss** – takes place when power supplies are disconnected and the panel restarted; the clock should be set with the user function.

**Battery trouble** - the battery voltage (under load) is lower than 12V. This condition can hold for more than ten hours after connecting a low battery, or after AC power supply loss. The battery charging time depends on its capacity (the battery is charged with direct current of approx. 350mA), the time necessary for testing the battery status is about 12 minutes.

#### **Telephone line troubles:**

- “no voltage on the line” means that the telephone line is cut off, it may also be caused by lifting the handset of a telephone connected to the same line for a longer time than that specified by the installer in service function FS117,
- “no signal”, “ busy signal on lifting the handset” - both point to the reason why telephone messaging system has failed; the signaling will remain until next successful telephone connection (it can be cleared by activating and deactivating the service mode).

#### **CURRENT TROUBLE CHECK-OUT - [7]**

If the system signals a trouble condition (TROUBLE LED is blinking), it is possible to check out which troubles have been detected by calling this function.

When the function is called, the TROUBLE LED and the LEDs corresponding to the numbers of occurring troubles will go on (as in function [6]).

#### **CHIME SWITCHING ON/OFF - [8]**

Any zones of the CA-6 plus control panel can be assigned the add-on CHIME option. Such zones signal a violation when the control panel (partition is not armed). The violation is signaled by five short beeps of the keypad. By means of the function [8] it is possible to activate or deactivate the chime signaling.

Confirmation of the function with three short beeps means that the signaling is switched off in the keypad. Confirmation with four short beeps and a long one means that the chime is on.

The function is active, if the chime signaling is not disabled by the installer.

**FIRE ALARM - [\*]**

This function enables the fire alarm to be triggered from the keypad. It transmits message to the monitoring station, and activates the fire alarm signaling devices and keypad alarm signaling, as well as activates the telephone messaging.

The function can be disabled by the installer.

**AUXILIARY ALARM - [0]**

The function transmits message on the auxiliary alarm to the monitoring station and activates the telephone messaging. The meaning of this alarm is defined as may be required. It may, for instance, be an emergency call for medical aid.

The function can be disabled by the installer.

**PANIC ALARM - [#]**

The function enables the panic alarm to be triggered from the keypad. The alarm signals are activated, a panic alarm message is sent to the monitoring station, and the telephone messaging is activated.

The function can be disabled by the installer.

# INSTALLATION OF THE CONTROL PANEL



The control panel main board contains electronic components sensitive to electric charges. Prior to installation, these charges must be removed. During installation, avoid touching any elements on the control panel main board.

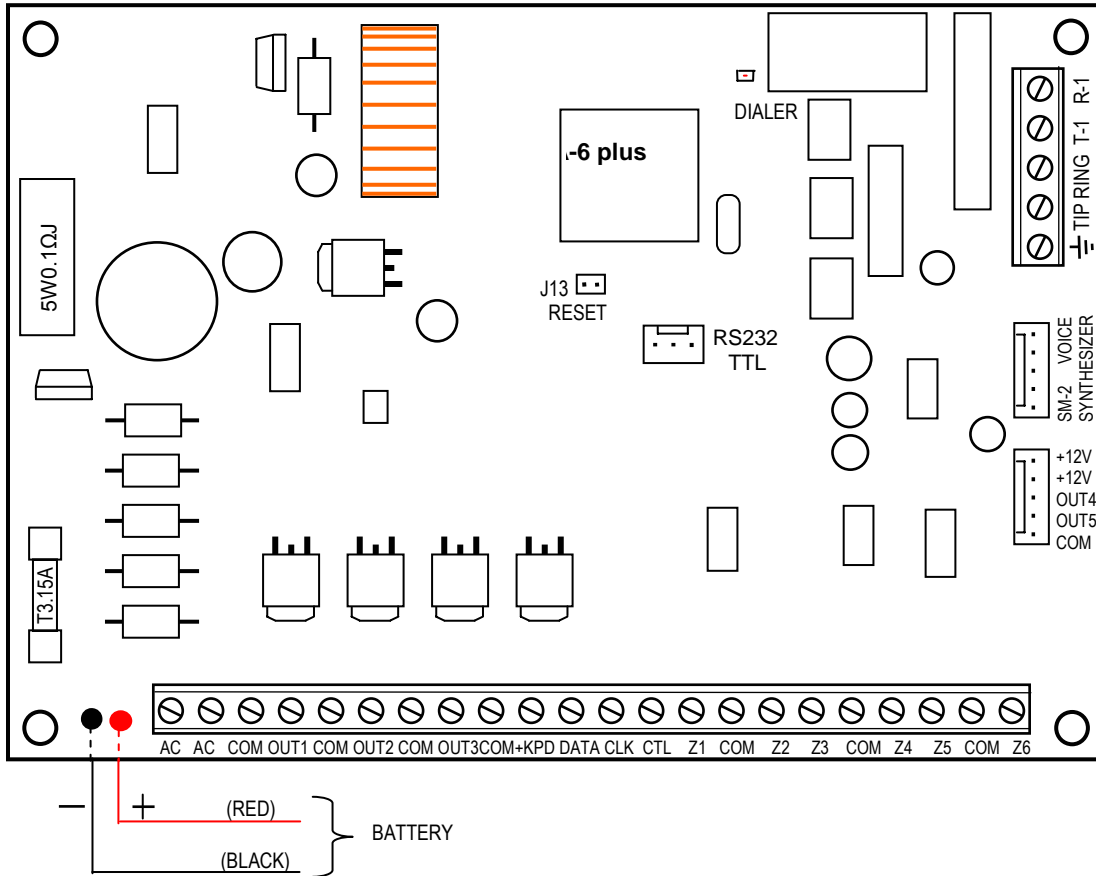


Fig 1. - Diagrammatic view of CA-6 plus main board in CA6Pv4.1 version.

### BOARD TERMINALS:

- AC** - module power supply inputs (~17...24V)
- Z1 to Z6** - zone inputs
- OUT1 to OUT3** - signaling output (current-carrying capacity 2,2A)
- OUT4, OUT5** - control panel programmable outputs (current-carrying capacity 50mA)
- DATA, CLK** - keypad terminals
- CTL** - steering input
- +KPD** - keypad power supply output (current-carrying capacity 1.5A)
- +12V** - power supply outputs
- COM** - ground
- ⏚** - protective terminal - ground (connect to protective circuit only)
- TIP, RING** - terminals of outside telephone line
- T-1, R-1** - terminals of extension telephone line (telephone set)

The „**DIALER**” LED is on during telephone messaging by the panel, and blinks during pulse dialing of the telephone number.

The **AC** terminals are intended for providing the **alternating** supply voltage from the mains transformer. The control panel power supply unit is suitable for the **17...24V** AC input

voltage. The control panel is fitted with an advanced pulse-type power supply of high energy efficiency and operational reliability, however, its correct functioning requires that the input voltage at the **maximum load** of the transformer by the control panel does not drop below **16V AC**.

The CA-6 main board enables an electric shock protection circuit (grounding) to be connected. The protective cable terminal is designated by the  $\perp$  symbol.

The „neutral” wire of the 230V AC mains supply must not be connected to it. If the site has no separate electric shock protection circuit, this terminal must be left free.



**The control panel power supply** (current efficiency 1,2A) is fitted with:

- voltage control system,
- battery status monitoring system with optional disconnection of the battery if discharged - during testing the processor reduces the power supply and the loads are powered from the battery. The testing takes place every 4 minutes and lasts for less than twenty seconds. If the battery voltage drops down to 9.5V, the control panel will cut off the battery in order to prevent it from a complete discharge and damage.

The stabilized voltage of the control panel power supply is +13.6V to +13,8V and is factory set.

Each of the high-current outputs OUT1 - OUT3 and +KPD is fitted with electronic short-circuit and overload protection devices.

**Two wires** (red and black) are intended for connecting the battery.

The **J13 „RESET”** pins make it possible to start the service mode without entering any service code. This function can be disabled by the installer with software means (see: FS 131 - Option 1).

The **RS232 TTL** interface is designed for programming the alarm system parameters from a computer. The panel sends and receives signals in the TTL (0V, +5V) standard, hence, a special cable of SATEL manufacture must be used to connect the panel and computer RS ports. The cable includes a converter changing this signal into a standard corresponding to the RS-232 interface in the computer (-12V, +12V). The data can be transmitted through the cable in both directions.

**NOTES:**

- *The connector may only be used when programming the panel. Never leave the RS cable permanently attached.*
- *Do not close or touch the connector pins with your fingers.*
- *Prior to connecting the cable, the installer should preliminarily remove the electrostatic charge e.g. touching a grounded fixture (a faucet or a heater) with the top of his hand.*
- *It is recommended that the cable be first connected to the control panel connector, and then to the computer connector.*



Attention should be paid so as not to cause overloading of the control panel power supply in the alarm system. It is advisable to make a **load balance** for the power supply. The total current inputs for the consumers (detectors, keypads) and the battery charging current may not exceed the power supply capacity. In case of a higher electric power demand, an additional power supply can be used for some of the security system consumers (e.g. APS -15, APS-30 manufactured by SATEL). Table 1 (at the end of this manual) shows an example of estimated balance of current consumption by the system, and an example of battery selection.

The CA-6 plus control panel should be installed in an enclosed space with normal humidity of air. The space should be fitted with an available permanent (not detachable) 230V power supply circuit with protective grounding. The telephone line must be of a four-wire type so that the control panel can be connected before the other equipment (telephone, fax, etc.).

The control panel can be mounted in the CA-4/5/6 OBU housing (this housing comprises a transformer designed for operation with the control panel power supply), which permits installation of a battery with 7Ah capacity. Before the housing is secured to the base, it is necessary to mount inside the housing plastic distance plugs, which are intended for subsequent installation of the mainboard. In case the plugs tend to slip out, the catches fixing the plug in the housing need to be slightly bent aside (Figure 2). When inserting the plug, press the central part of the head firmly in so that it is blocked in the housing hole. It is advisable to make sure that the plug, when pressed, does not slip out from the opening. During installation of the housing, be careful so as not to damage the wires which will be passed through the hole in its back panel.

When the housing is secured, you can install the control panel main board and proceed to making the connections.

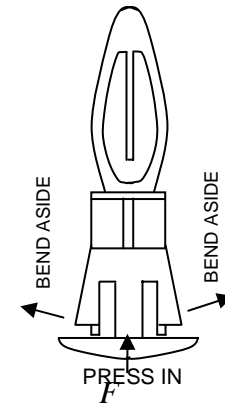


Fig. 2

***IMPORTANT:*** Do not connect the mains power supply and the **battery**, until all the remaining connections are completed.

#### CAUTION !

The control panel is power supplied from 230V AC mains. Negligence or wrong connection may result in electric shock and pose a threat to life!

Therefore, be particularly careful when hooking up the control panel. In the process of installation and connection of the control panel, the cable to be used for mains supply must not be alive!

## Connection of Keypad

The keypad should be connected to the system with a four-wire line, using the COM, +KPD, DATA, CLK connectors on the panel. Where typical (twisted) conductors are used, the cable length can be up to 200m. Do not use screened wires.

The keypad **jumpers** determine the address which is an additional anti-tampering protection. The pins D and A are shorted by default; provision is made for changing the address (see: FS-111, FS-124). The panel does not accept addresses of the „all closed” and „all open” type addresses. The address is stored in the panel EEPROM (non-volatile) memory, together with the other system parameters.

The keypad **Z1 and Z2** connectors permit connecting any detectors. They are supported by the control panel in the same way as the mainboard zone inputs. The keypad Z1 connector is treated as zone 7, Z2 - as zone 8.

**Provision is made for connecting additional keypads** (in parallel with the first one). Each keypad should be connected to the control panel by means of a separate cable. **The keypad addresses should be identical, the zone 7 and 8 can only be used in one of them**, elsewhere they should be left open (nothing is to be connected).



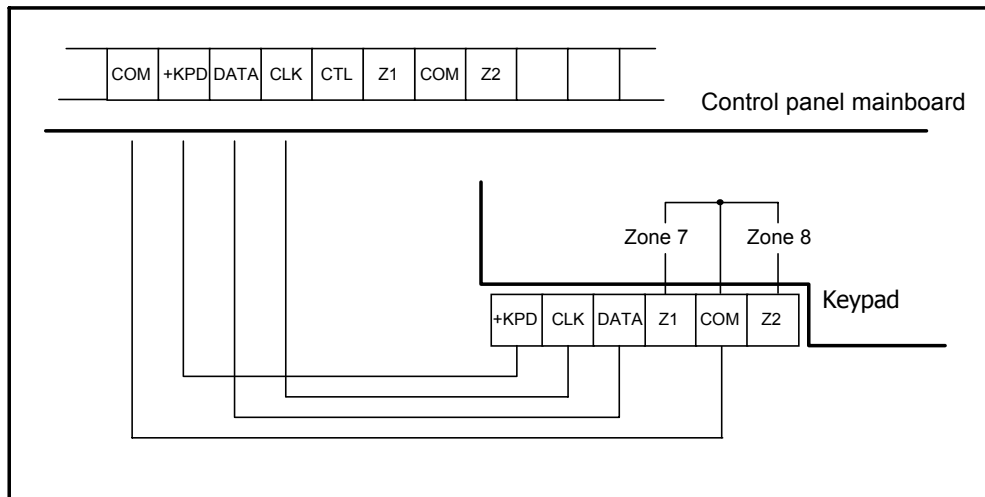


Fig. 3. - Connection of keypad to the control panel.

The keypad **anti-tampering contact** has no connection with the system anti-tampering circuit. Its state is defined by the control panel, based on the data received from the keypad. In case two keypads are connected in parallel, the control panel will detect tampering when both contacts are open.

When the control panel is in the service mode, the anti-tampering contact and the keypad address are not controlled. Should the panel alarm at the moment of exiting the service mode, it would mean an incorrectly programmed address, or opening of the anti-tampering contact.

## Connection of Detectors

The CA-6 plus can operate with detectors of any type. Each zone of the control panel can work in the configuration NC, NO, EOL, 2EOL/NO, 2EOL/NC. When the zone works in a one-parameter configuration (EOL), a 2.2 k $\Omega$  resistor should be used to make the detector circuit. With two-parameter inputs, the detector circuit is closed by two 1.1 k $\Omega$  resistors. This type of zones enables the status of detector and its anti-tampering contact to be monitored at the same time.

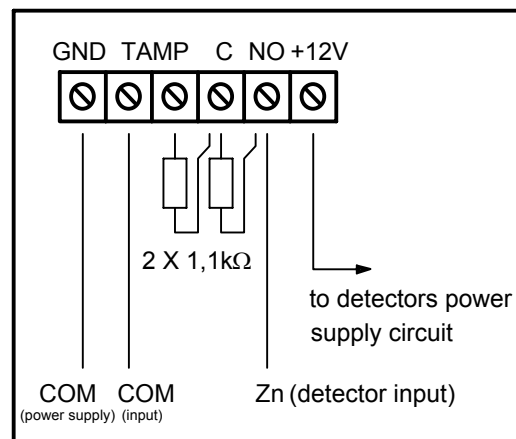


Fig. 4 - Connection of detector 2EOL

The detectors may be power supplied from any of the electronically protected outputs (OUT1 to OUT3). The output should be programmed as the "POWER SUPPLY OUTPUT". The use of OUT3 is suggested.

Figure 4 shows how the detectors are connected to the two-parameter configuration zone inputs (2EOL/NO or 2EOL/NC). Separation of the detector power supply ground and the line ground makes it possible to eliminate the harmful effect of wiring resistance. Assuming that the wire is rather short, and only one detector is connected to it, the installation can be simplified by using one wire for the power supply ground (GND) and the signaling ground. The NO and NC detectors in two-parameter configuration are connected in the same way, it is only important to correctly indicate to the control panel, what type of detector is connected to the zone input (2EOL/NO or 2EOL/NC).

## Connection of Signaling Devices

The CA-6 plus panel can control signaling devices of any kind. The panel outputs have no functions permanently assigned to them. They can perform 41 different tasks. Therefore, the system is very flexible and can suit almost every application. If there are signaling devices installed in the system, the alarm function will have to be assigned to corresponding outputs.

Where signaling devices are used that give alarm when power supply is switched on, it is convenient to assign the alarm function to the OUT1 and OUT2 outputs. If this is the case, the "+" of signaling device power supply should be connected to the control panel respective OUT output, and the signaling device "ground" - to the control panel COM connector. In this mode, two independent signaling devices can be set, or, with one output programmed for a specified time operation, and the other one for a switch-off operation - an acoustic / visual signaling device.

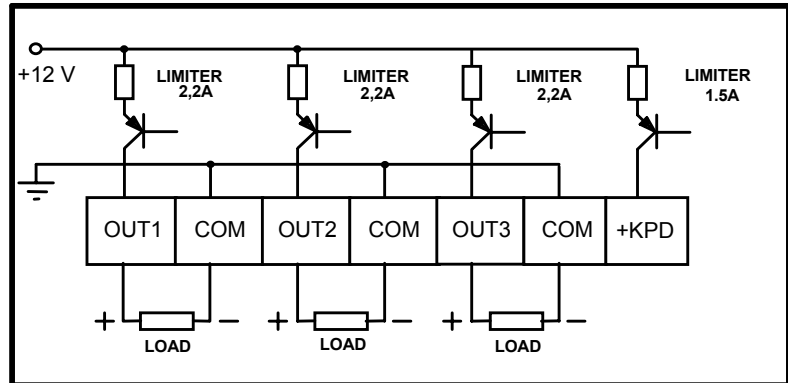


Fig. 5 - Diagram of high-current outputs.

Where signaling devices with their own internal battery are employed, the OUT1 or OUT2 output should be used to power the signaling devices, and the triggering signals should be provided by the OUT4 and/or OUT5 low-current outputs.

**Note:** The OUT1, OUT2, and OUT3 outputs must be loaded with resistors installed in the signaling devices. It is necessary for correct operation of the system and for load presence check. We recommend using 2.2 kΩ resistors. In case the acoustic signaling device, connected to one of the outputs, produces some undesirable low sounds when in deactivated condition, the resistor should be decreased. The SATEL-made signaling devices do not need such a resistor, as they guarantee correct level of the output load.

The OUT4 and OUT5 outputs can be used to control the relays switching on any signaling devices or other equipment. The relays may be directly connected to the outputs, as shown in Figure 6.

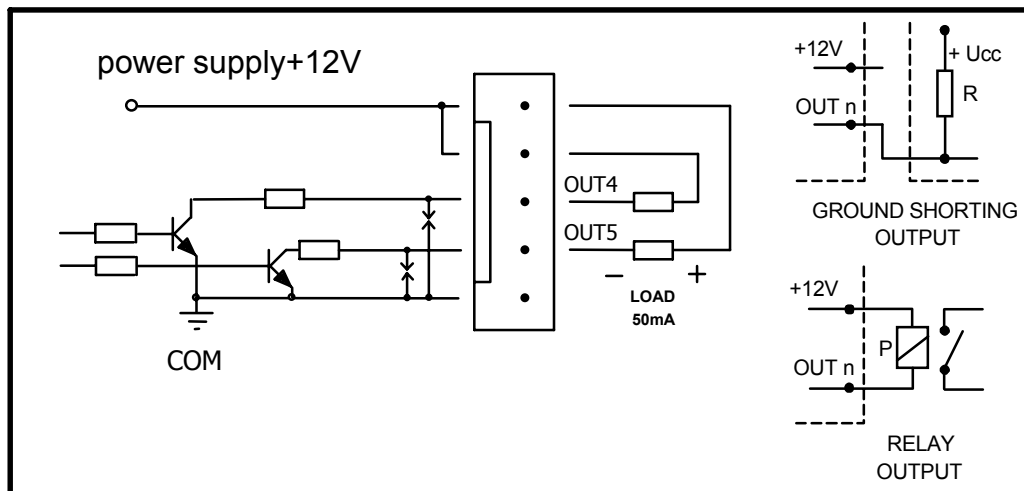


Fig.6 - Diagram of OUT4, OUT5 low-current outputs and load connection.

The OUT4 and OUT5 outputs can also be used to control the NOKTON NR2-DSC radio monitoring transmitter (NEMROD system - format PC16OUT). In such a case it is necessary to change the operating mode of these outputs by activating a suitable option in the service function 5. During operation with the NOKTON transmitter, the outputs are used for transmitting a number of data on the control panel state (zone alarms, fire alarms, troubles, armed mode, etc.) and do not perform functions programmed with the standard service functions.

Connection of the control panel to the transmitter is shown in Figure 7.

**Note:** When hooking up any equipment with a considerable current consumption (e.g. a radio monitoring transmitter) to the control panel, their "+" should be connected to the battery "+" (a fuse is required on the feeder cable). The ground must be connected to any COM contact of the control panel, but not directly to the battery "-". If connected to the battery "-", the ground will actuate the charging current limiter, eventually causing quick discharge of the battery.

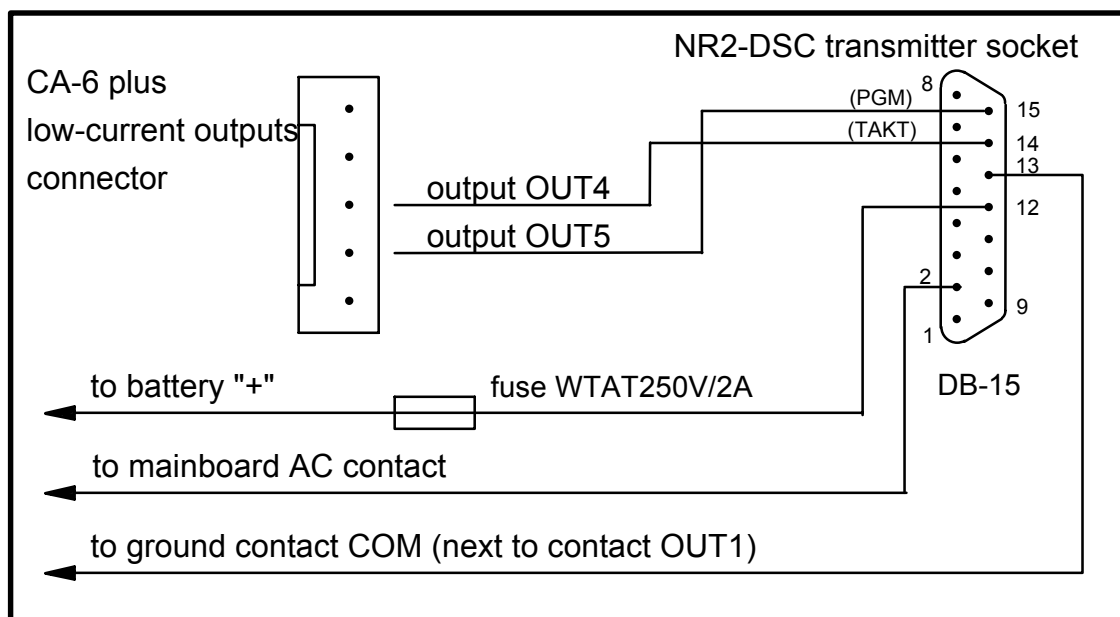


Fig. 7 - Connection of NR2-DSC controlled transmitter, made by NOKTON s.c.

## Connections of Telephone Line

If the control panel telephone communicator is used in the alarm system (for monitoring, messaging or remote programming), it is necessary to connect telephone line to the control panel. It should be led to a connector situated on the right side of the printed board. In order to ensure proper messaging, **the control panel must be directly connected** to the line (connectors designated as TIP and RING), and any other devices (telephone, telefax) - after the control panel (connectors designated as T-1 and R-1). Such a connection will make it possible for the control panel to fully engage the line for the time of calling, which prevents the messaging function from being blocked by lifting the handset. Additionally, the telephones connected after the control panel do not signal the dialing by the control panel.

**The telephone line** must be a four-wire line so that the control panel can be connected before the other devices (telephone, telefax, etc.).

### CAUTIONS!

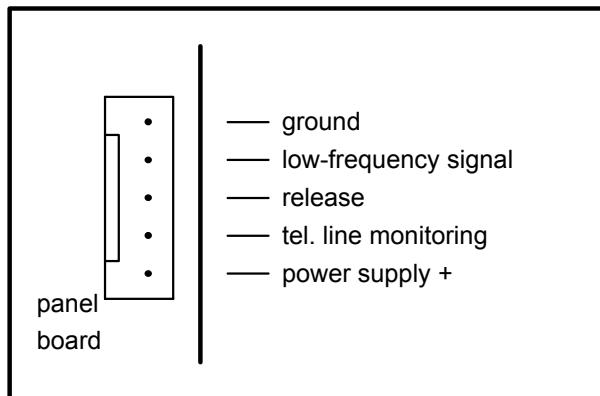
- Do not send telephone signals and alarm system signals by one multicore cable. This may result in a damage to the system in case of a high-voltage punch-through from the telephone line.



- Telephone terminals of the panel should be connected to PSTN lines only. Connecting to ISDN lines may lead to damage of the equipment.
- System installer should give the necessary information on the way of connection with telephone network to system owner.

## Connection of Voice Synthesizer

Where the function of alarm messaging with voice announcements is used, a voice synthesizer must be connected to the control panel.



The CA-6 plus panel interfaces with the SM-2 synthesizer. The synthesizer socket (designated as: SM-2 VOICE SYNTHESIZER) is situated on the right-hand side of the printed board, between the telephone line connector and the socket of OUT4, OUT5 outputs. The SM-2 synthesizer should be directly plugged into this connector. It is fitted with minijacks for playback of the message and "monitoring" of the telephone line.

Fig.8 - Description of SM-2 voice synthesizer connector.

## Connection of Power Supply

The control panel is permanently connected to the mains power supply. Hence, before you start to work on the system cabling, make yourself familiar with the electrical installation of the site. Select a circuit which is permanently alive to power the control panel. The circuit is to be protected with an appropriate fuse.

### CAUTION !

Before connecting the control panel to its power supply circuit, turn off voltage in the circuit.

### Description of electrical connections to the CA-4/5/6 OBU housing.

The AC power supply unit encased in the plastic box is fully electrically isolated from the metal housing.

- Connect the 230V alternating voltage leads to the transformer terminals marked "AC 230V".
- Connect the output voltage wires of the transformer secondary winding to the "AC~18V" terminals on the control panel main board.
- Connect the wire of the electric shock protection circuit to the terminal block provided next to the transformer and marked with the ground symbol (⏚). This circuit should also be connected to the control panel protective terminal.

### Starting procedure for the control panel power supply.

1. Connect the emergency power supply wires to the corresponding battery terminals (the red one to the battery plus, the black one to the minus). **The control panel will not start on connecting the battery alone** (without the mains power connected), however, it will keep on working in case of the 230V AC voltage trouble, provided it was already started.
2. Switch on the 230V AC mains supply – the control panel start follows.

Connection of the power supplies in the prescribed order will permit correct functioning of the power supply unit and the control panel electronic safety devices, thus avoiding damage to the security system elements caused by possible installation faults.

**NOTE!** *Should it be necessary to completely disconnect the control panel power supply (the mains and the battery), re-connection of the power supply is to be performed in the above mentioned order (the battery first, then the 230V alternating voltage).*

**Caution !**

As the control panel has no isolating switch to disconnect the mains supply, it is important that the owner or the user of the security system be informed on how the system is to be disconnected from the mains (e.g. by indicating the fuse which protects the control panel supply circuit).

## Starting the Control Panel

When all electrical connections are made and checked for correctness, you can proceed to starting the system. It is recommended to begin the work with the control panel with no signaling devices connected. These can be connected after programming parameters of the realized alarm system is completed. If the control panel operates with a keypad, having a default address (jumpers on pins „D” and „A”), then, after the power is switched on, the keypad will report readiness for work with four short beeps followed by a long one. If the ALARM diode is blinking, cancel it by entering the MASTER code [1234] and pressing [#]. Then, enter the default service code [12345] and confirm it with the [#] key. The control panel will enter the service mode, the ALARM and TELEPHONE diodes alternately blinking. At this moment, you can proceed to programming the control panel.

If, for whatever reason, the panel does not „see” the keypad when the power is on, and does not respond to the keystrokes (access code entry), or keeps on alarming, it is necessary to carry out the procedure of **hardware access to the service mode**.

This procedure is also required when changing the keypad address - which must be programmed first. If you fail to do that, the control panel may start alarming right after the power-up because it has detected the keypad tampering.

If this is the case, switch off the power supply (mains and battery) and do the following:

1. Check for correct setting the address jumpers and the anti-tampering contact in the keypad.
2. Put a jumper on the control panel RESET pins (J13).
3. Switch the power supply on. After the keypad beep, remove the jumper from the RESET pins (J13). This will activate the service mode signaled by four short and one long beeps.
4. Call the service function **FS 124**. The function automatically reads the keypad address and prepares the control panel for work in a new configuration.

The user can also program the address himself, by means of the service function **FS 111**. To make sure that all the settings are in accordance with the default values, you can **perform the service functions FS-107, FS-108 and FS-110**.

Having completed the procedure, exit the service mode using the function FS-0 and activate the service mode again - this time from the keypad - by entering the default access code [1][2][3][4][5] confirmed with the [#] key.

If the control panel has re-entered the service mode, it means that its functioning is correct and that you may proceed with further installation of the system (connection of sensors,

signaling devices, establishing communication with a computer, if required) and programming of all necessary parameters.

If the described procedure is unsuccessful, the option of hardware access to the service mode must have been disabled in the control panel by software means. If this is the case, it is necessary to carry out another procedure which would **enable the control panel** and restore the default settings - see description of the service function **FS-131**.

When programming the control panel from a computer, local communication should be initiated with the service function **FS 112**. Provision is also made for starting communication without calling the function **FS 112** - which is convenient if the control panel is already installed on the site and there is no keypad in the vicinity. Detailed description of step-by-step procedures is available in prompts to the DLOAD10 program, after selecting the „Local connection with...” command (Ctrl-6) from the „Communication” menu. This feature can be disabled with software tools by the installer (FS 131).

## Activating Selected Functions

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### Telephone messaging - alarm reporting.

The telephone messaging function requires that the following be programmed:

- **FS-5, FS-131** – activate the “telephone messaging” option, set the “dialing system” option as required by the telephone exchange,
- **FS-87 to FS-90** - enter at least one telephone number,
- **FS-95** – define the partitions from which alarms are to be reported to the telephone numbers programmed in functions FS87-90,
- **FS-100** – number of telephone messaging queues higher than zero and number of redials in a queue.

*Note: You should also program in FS-95 what kind of message will be sent - if no message is selected for the pager, the control panel will notify with a voice message from the voice synthesizer.*

When the above parameters are correctly programmed and the alarm is triggered, the on-board LED (designated as „DIALER” - next to the relay) should go on, which indicates that the panel has started telephone messaging (with pulse dialing the LED is blinking). It is recommended to test the messaging. To this purpose, use the ordinary headset connected to the „telephone line monitoring” jack in the SM-2 synthesizer (parallel connection of a telephone set to „monitor” the communication will interfere with the messaging operation). The telephone messaging will start immediately after triggering the alarm. Alarm clearing will interrupt the telephone messaging.

### Typical problems with starting the voice messaging:

- **control panel takes no attempts to call** – not all of the above mentioned items were programmed ;
- **control panel goes on line but fails to dial** – no dial tone or a non-standard dial tone from the telephone exchange – find out the cause of missing signal or deactivate the dial tone test option in FS-5 if the signal is non-standard;
- **control panel establishes connection, but sends no voice message** – wrongly programmed FS-95 – messaging to pager selected, but not voice message from the synthesizer;
- **control panel establishes connection, sends a message too early or too late** – the control panel recognizes answering the call on the basis of sound signals on the

telephone line, with permissible message sending delay up to 4 seconds from lifting the handset - if commutation signals on the telephone line are non-standard or there is strong interference (clicks, hum), the panel automatic equipment may not function properly – then you can extend the message by activating the “double message” option in FS-5 or deactivate the call answer recognition option;

- **control panel reports the alarm more times than the preprogrammed number of queues** – the control panel recognizes answering the call on the basis of a callback signal – if the user lifts the handset too quickly (during the first ring), the control panel may disregard the message and call again.

### Reporting to the telephone monitoring station

The monitoring station operator should provide the installer with the data necessary for the monitoring software. These are:

- monitoring station telephone numbers
- transmission format or a list of available formats
- alarm system identifier (site number)
- list of event codes

In order to start monitoring, the following items should be programmed:

- **FS-43 – monitoring station telephone number** - if there are two numbers or two stations, the other number should also be programmed in FS-44;
- **FS-45, FS-46 – station transmission formats** - in the case of a multi-format station, select format which is as fast as possible (e.g. Ademco Express or Radionics 2300 with parity),
- **FS-47 – monitoring options,**
- **FS-48, FS-54 – monitoring stations identifiers,** an identifier should have 3 or 4 non-zero characters (characters from “1” to “F”, “0” - no character), some stations use identifiers composed from digits from 0 to 9 - then character “A” is to be programmed instead of digit “0” (e.g. “A1A2” instead of “0102”)
- **FS-60 to 65 and FS-69,70,81,82,126 – event codes** according to the list from the monitoring station operator, the codes can be one-digit (the other character being 0) or two-digit - as required by the station, the codes with inappropriate length may block communication with the station,
- if split reporting to both stations has been selected in the options, events assignment should be programmed in the functions FS-67,68,73,74,77,78, 83,84
- **FS-5 – activate the option in “MONITORING” after the above items have been programmed.**

### Typical problems with starting the monitoring:

- **control panel takes no attempts to call** – not all of the above mentioned items were programmed – the control panel will not call the monitoring station if the programmed data do not allow sending a correct transmission to the station because of e.g. missing telephone number, identifier being shorter than 3 non-zero characters, missing event code, etc.;
- **problems with dialing** – no dial tone or a non-standard dial tone from the telephone exchange – find out the cause of missing signal or disable the dial tone test option in FS-5 if the signal is non-standard;

- **control panel sends no codes when connected to the station** - wrongly selected format or low quality of telephone connection (the panel does not “understand” the station dial tone);
- **station does not receive or acknowledge the codes sent by the panel** - wrongly selected format, inadequate identifier length (3 characters, while the station requires 4), inadequate event code length (1 character, while the station requires 2) or low quality of telephone connection.

A headset connected to the “telephone line monitoring” jack in the SM-2 synthesizer can be helpful in recognizing the troubles in communication with the monitoring station.

Connection with the station is established in the following way:

- the station answers the call and sends the, so-called, handshake signal (one or a few in sequence if the station supports several transmission formats);
- the control panel recognizes the station handshake signal and if it matches the programmed transmission format, the control panel answers by sending identifier and event code in appropriate tones (once or twice, depending on the selected format) – in the headset connected to the line monitoring jack, these sounds are much louder than the monitoring station signals ;
- if the station receives information, it will acknowledge it with the same signal as the handshake ;
- the panel disconnects or sends next codes if there still are some other events to be reported to the station.

The most frequent monitoring problems result from inaccurate information on the transmission formats supported by the given station (e.g., ambiguous names of the formats), errors in the data entered into the control panel, as well as poor quality of the telephone connections. Often only by “monitoring” the course of communication you are able to find the cause of a problem.

**NOTE:** *Some stations do not acknowledge reception of the event code if it has another format (e.g., 4/1 instead of the required 4/2). If this is the case, the control panel will repeat its attempts to establish communication, while telephones on the site will be disconnected - the costs of such connections may be very high. For this reason, it is recommended that all the programmed codes be very carefully checked. It is possible to activate the options 7 and 8 in FS-47, which makes the panel to omit the codes unacknowledged in 16 consecutive retries. Problems of this type do not occur in professional, multi-format monitoring stations (including the Satel STAM-1).*

### **Downloading - telephone communication with the computer.**

Before starting the first connection between the computer and the control panel, appropriate settings must be entered in the DLOAD10 program (CONFIGURATION window). Information on the modem configuration is contained in the DLOAD10 program „HELP” file (function activated with F1 key), topic: COMMUNICATION” and on page 75 of this manual. In the case of non-standard modems, you must refer to the modem manual for the information on configuration procedures.



### Modem initialization

The program initializes the modem after the „MODEM” item is selected from the „COMMUNICATION” menu. In case of any trouble, the program will display one of the two messages:

- **“modem not responding”** – which means a technical problem with communication with the modem, e.g. an incorrect COM port number, conflict with the Windows system drivers;
- **“initialization error”** – wrong command initializing the modem.

Correct initialization of the modem does not mean it is properly configured to work with the control panel. The first initializing commands, as suggested in the program, are sufficient for a correct operation of most older-generation modems (i.e. modems with a maximum speed of 2400Bps). The fast modems of a new generation require some extra commands being added to limit their operation speed.

### Local communication procedure:

- connect the computer modem to the “TIP” and „RING” terminals of the control panel telephone connector (**the telephone line must be disconnected !**, connections to the “T-1” and „R-1” terminals are irrelevant), and make sure polarity of the telephone signal inputs arrangement in the control panel is as shown in the drawing at the description of the service function FS-112;
- start the DLOAD10 program, select the CA6 control panel type (e.g. by opening the data of such a panel) and, from the menu „Communication”, select the “MODEM” item and the „LOCAL” or „CA-6 WITHOUT KEYPAD” connection mode. Further procedure will be prompted by the program;
- communication access codes in the control panel and in the alarm system computer data must be identical.

**Note:** *When starting communication with the function FS-112, make sure that the function FS-112 is only called when the modem starts sending signal to the control panel - there can be a few seconds' lag in some modems.*

### Remote communication procedure:

- program in the control panel:
  - **FS-2:** panel communication code (identifier by which the program recognizes the alarm system)
  - **FS-3:** computer communication code (identifier by which the control panel recognizes the computer authorized to establish connection)
  - **FS-4:** computer telephone number (which is not necessary but ensures a better protection against unauthorized access)
  - **FS-5:** “auto download” option (downloading activation from the outside), “double call” option (any setting) and the **FS-101** – number of rings before answer – if communication is to be initiated from the computer
- start the DLOAD10 program, select the CA6 control panel type (e.g. by opening the data of such a panel) and, from the menu „COMMUNICATION”, select the “MODEM” item and the „REMOTE” connection mode;
- communication access codes and the “double call” option settings in alarm system computer data and in the control panel must be identical.

You can also initialize communication with the panel with the user **function 0**.

**Telephone communication error messages:**

- **“modem not responding”** – the modem has not acknowledged the dialed number (a rare case, usually a problem caused by modem hardware or e.g. missing the “V1” initializing command),
- **“connection failed”, “no control panel signals”, “poor quality of connection, no control panel handshake”**
  - connection with the control panel was unsuccessful,
  - the control panel was off hook but did not answer the modem signal as it was much corrupted,
  - the control panel was off hook but did not answer the modem signal because it was not in the transmission format V.21 or BELL 103 (incompatible or **incorrectly configured** modem),
- **“communication code not acknowledged”** – the control panel established connection, but the computer communication code does not correspond to that programmed in the control panel in FS-3 - the panel disconnects,
- **“connection interrupted”** – the control panel stopped answering the computer signals.

**Note:** *If the control panel answers the call but fails to establish communication and disconnects, while the “double call” option is deactivated, it will be answering no calls for the next 5 minutes.*

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**PROGRAMMING - SERVICE FUNCTIONS**

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Design and program flexibility of the CA-6 plus control panel give the installer a full freedom of choice in defining the alarm system functions and operating mode. Additionally, they allow some extra functions to be assigned to the panel (for example, control of lighting, locks, cameras).

After restarting the program (with the default settings restoring function FS 107), the control panel in its basic version is pre-programmed for work in the following configuration:

- one partition including all the available lines (zones),
- zone 1 (Z1) - input line (delayed), EOL,
- zones 2 to 6 (Z2 ... Z6), 7,8 (Z1, Z2 in keypad) - instant, EOL,
- sensitivity of all zones - 480 ms,
- PRIORITY option activated for all zones - see: FS 27, option no. 1,
- other zone options deactivated, detector operation testing disabled,
- OUT1 output - acoustic signaling device (BURGLARY type, operation time equal to global time, when signaling alarm on +12V output, assigned to all zones),
- OUT2 output - visual signaling device (BURGLARY type, operation time - up to clearing, when signaling alarm on +12V output, assigned to all zones),
- OUT3 output - detectors power supply,
- OUT4 output - "READY" status (for all zones),
- OUT5 output - "BYPASS" status (for all outputs),
- no zone bypassing when silent armed mode activated, all functions available, except for disabled audible signaling of trouble,
- exit delay - 60 seconds,
- entry delay - 30 seconds,
- keypad alarm duration - 60 seconds,
- counting times of counters - 30 seconds; counter values - 0,

- all options deactivated (telephone messaging, monitoring, telephone answering, etc.),
- all data related to monitoring and telephone messaging erased,
- pager station signal parameters in accordance with the POLPAGER system.

All the control panel parameters can be programmed from the keypad, using the service functions. It is also possible to program the control panel by means of a computer through the modem (in the local mode, or remotely). When programming from the computer, pay attention to the information indicated by LEDs or audible signals.

### Service mode

**Control panel programming is possible after activating the service mode.** It can be activated when the control panel is not armed and signals no alarm. The activation consists in entering the service code (default=12345), confirmed by the [#] key. When activated, the POWER and TELEPHONE diodes are alternately blinking and a short beep is generated every 3 seconds. **The alarms are only signaled in the keypad and reported to the monitoring station, but the keypad tamper condition or address are not checked.**

The service mode is on until deactivated by the service function FS 0. It can also be exited with a computer command from the DLOAD10 program.

Almost all the control panel parameters are programmed on the basis of three function types: bit (BIT), decimal (DEC) and hexadecimal (HEX). In the course of programming, when functions programming a few parameters are used, the parameter number is displayed by the LEDs ARMED A,B and ALARM A,B.

### BIT functions

The bit functions are used to program two-state parameters: YES and NO (e.g. the functions of zone assignment to partition, options). During programming with a bit function, the LEDs 1 to 8 show the current setting of particular parameters (diode on - YES, off - NO). Pressing the keys [1] to [8] changes the state of the correspondig diode. The state of 8 parameters is confirmed with the [#] key. If the programming function includes more parameters, the control panel will signal with two short beeps acceptance of the first eight parameters and the LEDs 1 to 8 will display the state of the next group of eight. When all the parameters have been programmed, the control panel will signal exiting the function with four short beeps and a long one.

The [\*] key makes it possible to quit the function at any time without saving the changes in currently displayed data.

### DEC functions

These functions are used for programming data in the form of a few digits (for example, the test transmission time - 4 digits, individual times for line input - 16 x 2 digits). When running the function program, the LEDs 1-4 show the first digit (binary), LEDs 5-8 - the second digit, while the LEDs A, B, A, B display the counter of digit pairs (binary). The programming consists in entering a two-digit number and confirming it with the [#] key. The control panel will confirm acceptance of the datum with two short beeps. When all the parameters have been programmed, the function is exited which is signaled with four short and one long beeps.

The [\*] key makes it possible to quit the function at any time without saving the changes in currently displayed data.

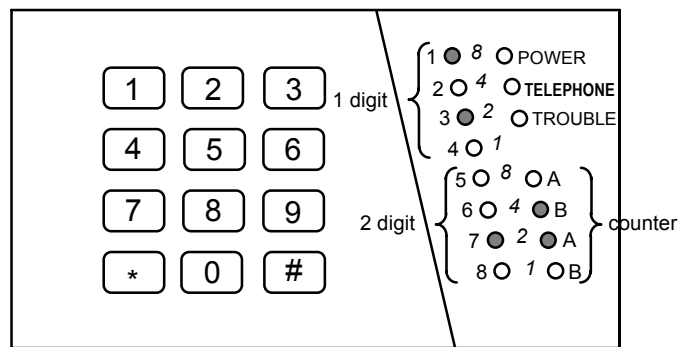
**HEX functions**

The functions are used to program hexadecimal data (e.g., monitoring codes). When running the function program, the LEDs 1-4 show the first hexadecimal digit, LEDs 5-8 - the second digit, while the LEDs A, B, A, B display the counter of digit pairs. Programming by means of this type of function consists in entering two hexadecimal digits and confirming it with the [#] key. For the digits 0-9 it is sufficient to press the corresponding key, the digits A-F are entered using the combination of keys [\*] and [0]...[5] (i.e. A=[\*][0], B=[\*][1], and so on). Pressing the [\*] key results in blinking of the digit, which will be changed after one of the keys [0]...[5] is pressed. The [\*][#] combination of keys makes it possible to exit the function without saving of the changes made.

*Note: Both in the decimal and hexadecimal function, consecutive depressions of numeric keys result only in displaying the respective number on the LEDs (the state of LEDs 1-4 and 5-8 is alternately changed). Only by pressing the [#] key you will save the status of the parameter displayed on the diodes .*

Fig.9 - The way of data reading from keypad.

The sixth parameter is being programmed (counter = 6), LEDs 1-8 indicate current value of the parameter equal to A2 (HEX).



**FS-0 - exiting service mode**

Pressing in turn the [0][#] keys terminates work in the service mode. The control panel starts functioning in accordance with the programmed settings . Exiting the service mode is signaled with four short and one long beeps.

**Functions programming basic parameters**

**FS-1 - programming service access code**

The service access code enables activation of the service mode. It can be from 4 to 6 digits long. The service function 1 makes change of the code possible. Programming procedure is identical as for the user function 1.

EXAMPLE:

- changing the service code from 12345 to 78901
- [12345][#] - enter the service mode
- [1] [#] - call the service function 1
- [78901][#] - enter the new code and confirm it; the function will be automatically exited.

**FS-2 - programming control panel identifier (HEX)**

After establishing connection with the computer in the DOWNLOADING mode, the panel sends a six-character system identification code. Programming of this code consists in entering three pairs of hexadecimal characters (digits from 0 to 9 and characters A, B, C, D, E, F - see the table of codes), in the following order: [first][second][#], [third][fourth][#], [fifth][sixth][#]. The LEDs will first display previous settings, and, after the change - the values of characters entered (binary, the first character - LEDs 1 to 4, the second - LEDs 5 to 8, number of pair of programmed

characters - LEDs A,B,A,B). Having entered the last pair of characters, the panel automatically exits the function.

**EXAMPLE:**

programming the identifier 23C4D5  
 [2] [#] - call the required function,  
 [2][3] [#] - enter the two first characters,  
 [\*2][4] [#] - enter the two next characters,  
 [\*3][5] [#] - enter the two last characters; after acknowledging them the panel will automatically exit the function.

**FS-3 - programming computer identifier (HEX)**

After sending its own identification code in the DOWNLOADING mode, the panel waits for a six-character identification code of the answering computer. **When the received code differs from that programmed with this function, the panel will hang up.** It will not accept any command from the computer, unless the computer code is correct. The programming is identical as in FS-2.

**FS-4 - programming computer telephone number (HEX)**

The computer telephone number is necessary for initiating communication from the control panel keypad (user function "0"). When communication is initiated from the computer, the panel, after the handshake, will hang up and call the computer back. It makes impossible a forced programming from another computer, but from the authorized service.

If the computer telephone number is not programmed, the computer initiated communication can be established in a simplified way - the control panel will not hang up and call back.

The telephone number can be up to sixteen digits long. It is programmed by entering the consecutive digits in pairs. The LEDs A,B,A,B show (in binary form) which pair of digits is being programmed, and the LEDs 1 to 4 and 5 to 8 show (also in binary form) the values of programmed digits.

The telephone number may also contain special characters, the purpose of which is to control the dialing. Particular codes have been assigned the following functions:

A(HEX) - end of telephone number ..... (combination [\*][0])  
 B(HEX) - switch to pulse dialing ..... (combination [\*][1])  
 C(HEX) - switch to tone dialing ..... (combination [\*][2])  
 D(HEX) - wait for dialing tone ..... (combination [\*][3])  
 E(HEX) - short pause (3 seconds) ..... (combination [\*][4])  
 F(HEX) - long pause (10 seconds) ..... (combination [\*][5])

**EXAMPLE:**

programming the number 0 D 39 12 47 27  
 [4] [#] - call the required function  
 [0][\*3] [#] - enter the two first characters  
 [3][9] [#] - enter the two next characters  
 [1][2] [#] - enter the two next characters  
 [4][7] [#] - enter the two next characters  
 [2][7] [#] - enter the two next characters  
 [\*0] [#] - enter the end-of-number character  
 [\*] [#] - exit the function after entering 11 characters.

**Note: Do not program the control characters B, C and D before the telephone number (they are set in the FS5 options). If shorter than 16 characters, the telephone number *must* be ended with the special code A.**

If the control panel fails to establish connection with the computer, it will hang up after four retries .

### FS-5 - programming the system options (BIT)

The function programs three sets of options which define the control panel operating mode.

FIRST SET OF OPTIONS (the lower LED B is blinking)

No.	LED	Option
1	ON	telephone messaging <b>on</b> (alarm reporting)
	OFF	telephone messaging <b>off</b>
2	ON	monitoring <b>on</b>
	OFF	monitoring <b>off</b>
3	ON	call answer <b>on</b>
	OFF	call answer <b>off</b>
4	ON	in case of problems with transmission to the station, monitoring will be suspended until a new event occurs
	OFF	monitoring suspended for 30 min

**NOTE:** The options 5 to 8 from the first set of options are irrelevant in the CA-6 plus.

SECOND SET OF OPTIONS (the lower LED A is blinking)

No.	LED	Option
1	ON	DOWNLOADING activation from outside <b>enabled</b>
	OFF	DOWNLOADING activation from outside <b>disabled</b>
2	ON	<b>TONE</b> dialing
	OFF	<b>PULSE</b> dialing
3	ON	<b>double</b> playback of alarm message from synthesizer
	OFF	<b>single</b> playback of alarm message
4	ON	<b>GROUND-START signal generated</b> before dialing (special tel. line service)
	OFF	<b>GROUND-START signal blocked</b>
5	ON	<b>no dial tone test</b> before dialing the number
	OFF	dial tone test activated (the dialer waits for dial tone before dialing the number)
6	ON	<b>no answer test</b> (synthesizer message emitted 15 seconds after dialing the number)
	OFF	<b>call answer test activated</b> (the dialer will send the message after detecting the call answer)
7	ON	OUT4, OUT5 outputs control the NOKTON radio messaging
	OFF	OUT4, OUT5 outputs perform their assigned functions
8	ON	<b>double call</b> to answer
	OFF	<b>single call</b> to answer

## THIRD SET OF OPTIONS (the lower LEDs A and B are blinking)

No.	LED	Option
<b>2</b>	ON	communication with the computer unavailable when one of the partitions is armed
	OFF	communication with the computer always available
<b>3</b>	ON	alarm if zones are violated after the exit delay elapses
	OFF	control panel does not alarm if zones in a partition are violated after the exit delay elapses
<b>7</b>	ON	OUT5 and OUT6 outputs work in „UA” format
	OFF	OUT5 and OUT6 outputs work in PC16OUT format (options 7 and 8 are deactivated)

*NOTE: The options 1,4,5,6 and 8 from the third set of options are irrelevant in the CA-6 plus.*

**FS-6 - programming entry delay, exit delay , and alarm time (DEC)**

The settings refer to the global times and are valid for the entries and exits to which no individual times are assigned. The exit delay time is common for both partitions. The alarm time programmed in this function refers also to the keypad alarm signaling.

*NOTE: The alarm time set with the function FS-6 defines also the zone alarms cut-off time - when the alarm is on, the subsequent zone violations will not trigger consecutive alarms until the cut-off time has elapsed.*

Programming the times is carried out in the following order:

- **entry delay** (from 01 to 99 seconds ) - the lower LED B is blinking,
- **exit delay** (from 01 to 99 seconds) - the lower LED A is blinking,
- **alarm time** (from 01 to 99 seconds) - LEDs A and B are blinking.

EXMAPLE:

programming the times:  $T_{WE} = 30$  s,  $T_{WY} = 60$  s,  $T_{AL} = 90$  s

- [6] [#] - call the required function
- [3][0] [#] - enter the entry delay time (two digits)
- [6][0] [#] - enter the exit delay time (two digits)
- [9][0] [#] - enter the alarm time; after acknowledging the last time, the control panel automatically exits the function.

**FS-7 - programming the counting line counters (DEC)**

The control panel is equipped with three independent violation counters which can be associated with any zones. Violation of these zones will only trigger alarm after the programmed number of violations is exceeded. All the violations must occur within a specific period of time. Each counter can sum up violations of one or several zones defined as the counting ones (e.g. the counter 1 can count violations of zone 2, the counter 2 - violations of zones 4, 5, 6).

Three counter values are programmed, from 01 to 07, in the following order: counter 1, counter 2, counter 3. If no counting zones are provided in the panel, the programmed values are irrelevant.

Time gates corresponding to the counters are programmed in FS-123.

**EXAMPLE:**

programming the counters: the 1<sup>st</sup> - 2 violations, the 2<sup>nd</sup> - 5 violations, the 3<sup>rd</sup> - not used

- [7] [#] - call the function
- [0][2] [#] - program the first counter (the lower LED B is blinking)
- [0][5] [#] - program the second counter (the lower LED A is blinking)
- [\*] - exit the function - programming of the third counter is omitted

In case of programming three counters, the function is automatically exited after the third counter has been programmed.

## **Functions programming assignment**

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### **FS-8 - programming partition 1 zones (BIT)**

### **FS-9 - programming partition 2 zones (BIT)**

The functions FS-8 and FS-9 are used to divide the alarm system into partitions.

It is possible to assign any zone to the partitions. Independent signaling devices and messaging telephone numbers can be assigned to the partitions, and separate access codes can be programmed – thus creating two independent alarm systems.

A zone can be assigned to both partitions at the same time. The common zone will only be armed, when both partitions are armed.

If one partition is fully assigned to the other one (i.e. forms a, so-called, internal partition), arming the superior partition will also arm the internal partition.

The programming consists in lighting up the LEDs to indicate the zones which are to be assigned to a partition.

Use the [#] key to confirm the selection and exit the function. Use the [\*] key to interrupt the programming.

### **FS-16 - programming bypassed zones in partition 1 (BIT)**

The AUTO-BYPASS function applies to the zones which are automatically bypassed after arming with the authority level 7 code (partial arming), assigned to the partition 1. The same zones are bypassed after silent arming of partition 1.

The control panel permits also programming another set of automatically bypassed lines - EXIT-BYPASS zones - with service functions FS-127 FS-128).

The programming procedure is similar to that described in FS-8 and consists in switching on the LEDs with numbers of required zones. When the zones are defined, confirm them by pressing the [#] key.

### **FS-17 - programming bypassed zones in partition 2 (BIT)**

The function refers to the automatically bypassed zones in partition 2. The programming as in FS-16.

### **FS-20 - programming keypad and partition options (BIT)**

Some of the user functions and the keypad beeps are optional. The FS-20 function defines which of them are to be performed.

Two sets of options are programmed. The options selected for each set are to be confirmed with the [#] key.



FIRST SET OF OPTIONS (the lower LED B is blinking):

No.	LED	Option
<b>1</b>	ON	QUICK ARM partition 1 [1][#] <b>disabled</b>
	OFF	QUICK ARM partition 1 [1][#] <b>enabled</b>
<b>2</b>	ON	QUICK ARM partition 2 [2][#] <b>disabled</b>
	OFF	QUICK ARM partition 2 [2][#] <b>enabled</b>
<b>3</b>	ON	QUICK ARM both partitions [0][#] <b>disabled</b>
	OFF	QUICK ARM both partitions [0][#] <b>enabled</b>
<b>5</b>	ON	3 wrong codes alarm disabled
	OFF	3 wrong codes alarm enabled
<b>6</b>	ON	PANIC alarm disabled
	OFF	keypad PANIC alarm enabled
<b>7</b>	ON	AUX alarm disabled
	OFF	keypad AUX alarm enabled
<b>8</b>	ON	FIRE alarm disabled
	OFF	keypad FIRE alarm enabled

SECOND SET OF OPTIONS (the lower LED A is blinking):

No.	LED	Option
<b>1</b>	ON	keypad alarm signal until cleared
<b>2</b>	ON	alarm signal for the global alarm time
<b>1, 2</b>	OFF	no keypad alarm signal
<b>3</b>	ON	DAY/NIGHT or COUNTING zone violation signaled in keypad (5 long beeps)
	OFF	no DAY/NIGHT or COUNTING zone violation signal
<b>4</b>	ON	CHIME signal on (five short beeps)
	OFF	CHIME signal off
<b>5</b>	ON	trouble signal on (two short beeps)
	OFF	trouble signal in keypad off
<b>6</b>	ON	EXIT DELAY signal on (one long beep every three seconds)
	OFF	EXIT DELAY signal off
<b>7</b>	ON	ENTRY DELAY signal on (one short beep every three seconds)
	OFF	ENTRY DELAY signal off
<b>8</b>	ON	key pressed signal on
	OFF	no key pressed signal

## Functions programming zone parameters

### FS-24 - programming zone sensitivity

Each zone of the CA-6 plus panel can have its individual reaction time. Violations lasting shorter than the programmed reaction time are disregarded by the control panel. The programming includes values from 1 to 255 which corresponds to the times of 0.016 sec. do 4.08 sec. (REACTION TIME = PROGRAMMED VALUE x 0.016 sec).

By default, all the zones have the same reaction time (0.48 s). In most cases, no change of the time setting will be required.

The function is intended for advanced installers. It allows the zone sensitivity to be selected where special detectors are used (for example, mechanical detectors of broken glass, or low hysteresis detectors, not fitted with univibrator at the output).

**Note:** *The minimum sensitivity of the keypad zones is 64ms (4 x 0.016sec.). The actual sensitivity values of these zones can amount to  $n \times 64ms$  ( $n=1,2,3,\dots$ ). This results from the way the keypad is handled by the control panel – the status of these zones is read out at intervals of exactly 64ms.*

During programming, the LEDs A,B,A,B indicate which zone the parameter refers to. The zone number is displayed in the binary form (for zone 1 - the lower LED B is blinking, for zone 2 - the lower LED A, for zone 3 - both of them, etc.).

After setting a value for the given zone, press the [#] key to proceed to programming the reaction time of the next zone. After the last parameter is entered and confirmed, the control panel will exit the function.

The programming can be interrupted by using the [\*] key and the values confirmed with the [#] key will be saved.

#### EXAMPLE

changing the reaction time of zones 1, 3 and 6 to 0.8 s, zone 8 to 0.1 s, the other zones unchanged

$0.8s/0.016s = 50$  (enter the same value for zones 1,3 and 6)

$0.1s/0.016s = 6.25$  (enter 6 for zone 8, which will ensure the reaction time = 0.096s)

[2][4]	[#]	- call the function	
[5][0]	[#]	- reaction time for the first zone	(LEDs A,B,A,B = 0001)
	[#]	- confirm the second zone time	(LEDs A,B,A,B = 0010)
[5][0]	[#]	- reaction time for the third zone	(LEDs A,B,A,B = 0011)
	[#]	- confirm the fourth zone time	(LEDs A,B,A,B = 0100)
	[#]	- confirm the fifth zone time	(LEDs A,B,A,B = 0101)
[5][0]	[#]	- reaction time for the sixth zone	(LEDs A,B,A,B = 0110)
	[#]	- confirm the seventh zone time	(LEDs A,B,A,B = 0111)
[6]	[#]	- reaction time for the eighth zone	(LEDs A,B,A,B = 1000)

### FS-25 - programming detector type (DEC)

It is possible to connect NC, NO, EOL, 2EOL/NC, and 2EOL/NO detectors to the control panel. As each of them provides the panel with a different kind of information, it is necessary to determine the type of detector connected to each zone. For example, an open zone can mean correct state of the NO detector or violation of the NC detector, as well as tamper violation in the case of two-parameter configuration.

The programming consists in entering an appropriate two-digit number (to determine the detector type) for individual zones. After acknowledging the detector type for one

zone, the control panel proceeds to programming the next zone type, until particular detector types are assigned to all the zones. Correct are the following numbers:

- 00 - no detector (for unused zones)
- 01 - NC detector (normally closed)
- 02 - NO detector (normally open)
- 03 - EOL detector (one-parameter - default value)
- 04 - 2EOL/NC detector (two-parameter – NC detector)
- 05 - 2EOL/NO detector (two-parameter – NO detector)

During the programming, the control panel will display the current parameter setting (in binary form) on LEDs 1 to 8. The LEDs A,B,A,B show the line for which the detector type is being programmed.

EXAMPLE programming the EOL typ zones 1 do 6, NC type zones 7 to 8

- [2][5] [#] - call the function
- [0][3] [#] - detector type for the first zone (LEDs A,B,A,B = 0001)
- [0][3] [#] - detector type for the second zone (LEDs A,B,A,B = 0010)
- [0][3] [#] - detector type for the third zone (LEDs A,B,A,B = 0011)
- [0][3] [#] - detector type for the fourth zone (LEDs A,B,A,B = 0100)
- [0][3] [#] - detector type for the fifth zone (LEDs A,B,A,B = 0101)
- [0][3] [#] - detector type for the sixth zone (LEDs A,B,A,B = 0110)
- [0][1] [#] - detector type for the seventh zone (LEDs A,B,A,B = 0111)
- [0][1] [#] - detector type for the eighth zone (LEDs A,B,A,B = 1000)

### FS-26 - programming zone reaction type (DEC)

The control panel reaction to a zone violation depends on the function assigned to the given zone (e.g., the reaction will be different in the case of a 24 h fire type zone violation, and in the case of an arming zone violation).

The programming consists in entering an appropriate two-digit number for each zone to determine its function (reaction type). Each of the CA-6 plus zones can perform one of the 18 functions:

**00 - ENTRY/EXIT** the violation of which, when in the armed mode, will start countdown of the entry delay time and will enable the delay mechanism for “interior delay” type zones (violation of an “interior delay” zone without prior violation of the "entry/exit" zone will trigger an alarm immediately). Upon violation, a “zone violation” code is sent to the station (it is possible to skip sending this message), and, after counting down the "entry delay time" and triggering the alarm - a “zone alarm” code. The " entry delay " countdown can be signaled in the keypad. It is possible to define automatically bypassing zones if no „entry/exit” zone is violated during the exit delay time.

Because of its additional functions, this zone type cannot be used as a common zone for several partitions.

**01 - DELAY** - when violated in the armed mode, it starts delay countdown, after which an alarm is triggered. It will not occur if the zone is disarmed before completion of the delay countdown. Upon violation, a “zone violation” code is sent to the station (it is possible to skip sending this message), and, after counting down the "entry delay time" and triggering the alarm - a “zone alarm” code. The delay is not signaled in the keypad.

**02 - INTERIOR DELAY** - when violated in the armed mode after previous violation of the ENTRY/EXIT zone, it behaves like a DELAY zone. When violated in

the armed mode without previous violation of the ENTRY/EXIT zone, it behaves like an INSTANT zone.

- 03 - INSTANT** - when violated in the armed mode, it immediately triggers an alarm and sends a "zone alarm" message to the monitoring station.
- 04 - DAY/NIGHT** - when violated in the armed mode, it behaves like an INSTANT zone, while when disarmed, it will signal violation in the keypad (unless the signaling is disabled) and send a "zone violation" code to the station.
- 05 - COUNTING L1** - when violated in the armed mode, it increases the status of the first of three violation counters (a „zone violation" code is sent to the station), until the number of violations specified for that counter is exceeded (programming in FS-7). Then, the violation triggers an alarm (a „zone alarm" code is sent to the station). By default, the count-up time is set at 30 seconds. It is possible to program another **counter count-up time** (FS-123). If the violation counter is not overflowed within this time, it will be reset. The next zone violation will start the add-up procedure all over again. The violations are added up starting from zero, and the count-up time starts upon the first violation after resetting the counter. The "counting L1" function can be assigned to more than one zone, then violations of those zones will be summed up. The zone will trigger an alarm upon exceeding the programmed number of violations added up by a given counter. Alarm can also be triggered after resetting the counting zone counter, if the zone associated with the given counter is still violated.
- 06 - COUNTING L2** - operation identical as for the "counting L1", but changes the status of the second of three counters.
- 07 - COUNTING L3** - operation identical as for the "counting L1", but changes the status of the third of three counters.
- 08 - 24H AUDIBLE** - armed all the time, irrespective of whether the partition it is assigned to is armed, or not. Each violation of this line will trigger alarm on the BURGLARY alarm type outputs, in the keypad, and will send a "zone alarm" code. It makes possible to create anti-tampering circuits and panic buttons.
- 09 - 24H AUXILIARY** - armed all the time, irrespective of whether the partition it is assigned to is armed, or not. Each violation of this line will trigger an alarm in the keypad and will send a "zone alarm" code. It is intended for connecting detectors not related to the burglary alarm, such as gas or flooding sensors, etc.
- 10 - 24H SILENT** - armed all the time, irrespective of whether the partition it is assigned to is armed, or not. Violation of this line will only send a "zone alarm" code to the monitoring station.
- 11 - 24H FIRE** - armed all the time, intended to manage the fire detectors.

If the control panel contains a zone programmed as the "fire power supply", violation of the zone will actuate the alarm verification mechanism and will signal alarm in the keypad. To perform the verification, disconnect momentarily power supply to the fire detectors and check, whether after reconnection of power supply the violation will be repeated within 90 seconds. If that's the case, the control panel will send a „zone alarm" message to the monitoring station, activate the "fire alarm" outputs, and trigger the fire alarm (intermittent signal) in the keypad.

If there are no fire detector supply zones, the zone violation will immediately send a „zone alarm" code to the monitoring station, activation

of the "fire alarm" and "fire/burglary alarm " type outputs, as well as trigger the fire alarm (intermittent signal) in the keypad.

- 12 - ARMING** - violation of this zone will arm the partitions the zone belongs to.
- 13 - SILENT ARMING** - violation of this zone will arm in silent mode the partitions the zone belongs to.
- 14 - DISARMING** - violation of this zone will disarm the partitions the zone belongs to.
- 15 - NO ALARM ACTION** - violation of this zone will activate the "zone violation" type outputs.
- 16 - ARMING/DISARMING** – violation of this zone will arm the partitions the zone belongs to, end of violation will disarm those partitions .
- 17 - DELAY AUDIBLE** – a delayed zone with the same function as the 01 type zone, but with delay countdown signaling in keypads.
- 18 - AUTOMATIC BYPASS ARMING** – violation of this zone arms the partition the zone belongs to, simultaneously bypassing the zones programmed as AUTO-BYPASS (see service functions 16,17)
- 19 - PERIMETER** – zone armed since entering the access code and confirming it with the [#] key (i.e. arming the partition). Violation of this zone during countdown of the „exit delay” will trigger an alarm.

#### FS-27 - programming zone options (BIT)

Each control panel zone has eight associated options which activate additional functions of the zone. The use of these options depends on the zone type. The control panel tests only the options relevant to the given zone. For example, it is of no use to activate the "auto-bypassed after first alarm" option or the "must not be violated on arming" option for the "arming" type zones. Activation of such options has no effect on the zone functioning.

Activation of the zone options is carried out individually for each zone and consists in lighting up the LEDs for corresponding options.

The LEDs 1 to 8 have been assigned the following options:

No.	LED	Option
<b>1</b>	ON	PRIORITY (may not be violated on arming)
	OFF	may be violated on arming
<b>2</b>	ON	CHIME (generates chime signal when disarmed)
	OFF	generates no chime signal
<b>3</b>	ON	AUTO-RESET 1 (auto-bypassed after first alarm)
	OFF	always alarms (when both options 3 and 4 are off)
<b>4</b>	ON	AUTO-RESET 3 (auto-bypassed after third alarm)
	OFF	always alarms (when both options 3 and 4 are off)
<b>5</b>	ON	ABORT DELAY (no violation code reported to monitoring station during "entry delay "
	OFF	violation code reported during "entry delay "

<b>6</b>	ON	POWER UP DELAY (zone bypass for 120 s after control panel power-up)
	OFF	zone controlled immediately after power-up
<b>7</b>	ON	RESTORE AFTER BELL (zone violation restore code reported to monitoring station after alarm ends)
	OFF	zone violation restore code reported to monitoring station immediately (with option 8 also off)
<b>8</b>	ON	RESTORE AFTER DISARM (zone restore code reported to monitoring station after disarming)
	OFF	zone restore code reported immediately (with option 7 also off )

During programming, the LEDs A,B,A,B show the number of zone for which the options are being programmed.

### FS-28 - programming individual entry delay (DEC)

Where different entry delay times are required for the particular zones, it is possible to program individual "entry times" (alarm delays). The programming consists in entering the times for delayed zones from 00 (then the global time specified in FS-6 is valid) to 99 seconds.

The programmed times only refer to the ENTRY/EXIT, DELAY, INTERIOR DELAY and DELAY AUDIBLE zone types.

If the entry delay is programmed for other zones than the delayed ones (e.g., for the INSTANT zones), it will have no effect on the reaction type of those zones.

#### EXAMPLE:

programming the entry delay time (alarm delay) for the following zones: zone 4 - delay 30 seconds, zone 7 - delay 45 seconds, zone 8 - delay 60 seconds.

```
[2][8] [#] call the function
        [#] skip programming entry delay for zone 1
        [#] skip programming entry delay for zone 2
        [#] skip programming entry delay for zone 3
[3][0] [#] program the entry delay for zone 4
        [#] skip programming entry delay for zone 5
        [#] skip programming entry delay for zone 6
[4][5] [#] program entry delay for zone 7
[6][0] [#] program entry delay for zone 8
        [*] exit the function - omit programming entry delay for the other zones
```

## Functions programming output parameters

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### FS-31 - programming OUT1 output

The function makes it possible to define basic parameters regarding the OUT1 output:

- **output type** (determines in which conditions the output will be activated),
- **output cut-off time**
- **operation options** (e.g., "polarity")

After selecting the function, the LEDs 1 to 8 show the respective parameter setting, while the LEDs A,B show which parameter is being programmed.

**The first parameter** defines the **output type** (the lower LED B is blinking).

To program the output type, enter a two-digit number (identically as in the DEC functions) and confirm it with the [#] key.

**The second parameter** defines the **output cut-off time** (the lower A LED is blinking). Enter a time from 00 to 99 (similarly as in the other DEC functions).

**The third parameter** (the LEDs A and B are blinking) is a **set of eight options**, determining i.a. the zone assignment to partitions and other details of the output operation. The programming options are similar to the other BIT functions. After confirmation of the option, the function is exited.

The output operation depends also on the „list of outputs" associated with the output, which is programmed in a separate service function (for OUT1 in FS-32).

The basic parameter is the "output type". It determines the use of the other output parameters. Each of the outputs can be assigned any type from the following list:

**00 - NOT USED** - remains inactive from the power-up, according to the setting of „polarity" option.

**01 - BURGLARY** - the output starts on detecting a burglary alarm by the control panel. The alarm is triggered by armed zones, zone anti-tampering circuits, keypad tamper detector, and by the user (through the ALARM PANIC function). If the zones to which the output is to react are defined, the zone alarms will be limited to those included in the „list of outputs" (the other alarms will be effected irrespective of the source). It is also possible to indicate (in the output options) the partition the output is associated with. If this is the case, the zone alarms will be limited to those from the zones belonging to the partition indicated. When the "list of outputs" is empty and no partitions are indicated, the output reacts to all alarms (except for the fire alarms).

The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the alarm is cleared by the user. During its operation, it can every second change its state (pulsate).

**02 - FIRE/BURGLARY** - the output starts on detecting by the control panel of a burglary alarm (continuous signal) and/or a fire alarm (intermittent signal). The output operation can be limited to the indicated "list of outputs" or a specific partition (identically as for the **01** output type). The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the alarm is cleared by the user.

**03 - FIRE** - the output starts when the control panel detects a fire alarm. Such an alarm is triggered by fire zones or the user (through the ALARM FIRE function). The output operation can be limited to the specified "list of outputs" or particular partitions (identically as for the **01** output type), indication of any zones other than the fire ones having no sense, as they would not generate a fire alarm. The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the alarm is cleared by the user. During operation, it can every second change its state (pulsate).

**04 - KEYPAD ALARMS** - the output starts on detecting any keypad alarm. The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the alarm is cleared by the user. During its operation, it can every second change its state (pulsate).

- 05 - KEYPAD FIRE ALARM** - the output starts on triggering the fire alarm by the user (with the FIRE ALARM function). The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the alarm is cleared by the user. During operation, it can every second change its state (pulsate).
- 06 - KEYPAD PANIC ALARM** - the output starts on triggering the PANIC alarm by the user. The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the alarm is cleared by the user. During operation, it can every second change its state (pulsate).
- 07 - KEYPAD AUX. ALARM** - the output starts on triggering the alarm by the user with the ALARM AUX function. The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the alarm is cleared by the user. During operation, it can every second change its state (pulsate).
- 08 - KEYPAD TAMPER ALARM** - the output starts on detecting violation of the tamper contact or a change of the keypad address, and also after 3 wrong codes. The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the alarm is cleared by the user. During operation, it can every second change its state (pulsate).
- 09 - DAY/NIGHT + COUNTING** - the output starts on detecting violation of disarmed DAY/NIGHT zone or violations of COUNTING zones, which trigger no alarm. Operation of the output can be restricted to a specified "list of outputs" (identically as for the **01** output type). Indication of any other zones than those tested by this output type is irrelevant - they will give no violation signal. The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the alarm is cleared by the user. During operation, it can every second change its state (pulsate).
- 10 - DURESS alarm** - the output starts on using an access code with authority level 4 (DURESS) to disarm the system or to signal an alarm. This code is used to trigger a special "disarm under duress" alarm. Operation of the output can be restricted to alarms from particular partitions. The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the alarm is cleared by the user. During operation, it can every second change its state (pulsate).
- 11 - CHIME** - the output starts on violating the disarmed zones for which the "chime" option has been activated. Operation of the output can be restricted to the indicated "list of zones" or to specified partitions (identically as for the **01** output type). The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the alarm is cleared by the user. The output signals violations according to the chime lock setting in keypad (the lock is activated with the function 8, called by holding down the key).
- 12 - SWITCH MONO** - the output is activated by calling the user function 7 or using a code with authority level 5. Operation of the output can be restricted to specified partitions. The output can remain active for a time from 01 to 99 seconds or from 01 to 99 minutes.
- 13 - SWITCH BI (ON/OFF)** - the output changes its state when the user function 8 is called or a code with authority level 6 is used.



- 14 - ARM STATUS** - the output is active in the armed mode. Operation of the output can be restricted by indicating a „list of zones” or specific partitions. Unless zones and partitions are indicated, the output is active when any partition (zone) is armed.
- 15 - SILENT ARM STATUS** - the output is active in the silent armed mode. Operation of the output can be restricted by indicating a „list of zones” or specific partitions.
- 16 - EXIT DELAY WARNING** - the output is active during the „exit delay” countdown by the control panel. Operation of the output can be limited to indicating the „exit delay” for specified partitions.
- 17 - ENTRY DELAY WARNING** - the output is active during the „entry delay” countdown. Operation of the output can be limited to indicating the „entry delay” for specified partitions.
- 18 - TEL. USAGE STATUS** - the output is active when the control panel is on the telephone line.
- 19 - GROUND START** - the output activated by the control panel to generate the GROUND START pulse (a 2 sec. signal occurring before the control panel "lifts the handset", required by a specific type of telephone exchanges).
- 20 - MONITORING CONFIRMATION** - the output activated for 3 seconds by the control panel, after correct termination of the monitoring session.
- 21 - BYPASS STATUS** - the output is active when some zones are bypassed in the system. Operation of the output can be limited to showing the bypass of zones specified in the list of zones, or the bypass of indicated partition zones.
- 22 - READY STATUS** - the output is active when all the control panel zones are free from violations. Operation of the output can be limited to showing the READY status of zones specified in the list of zones, or the READY status of indicated zones.
- 23 - ZONE VIOLATION** - the output starts when one of the zones is violated. Operation of the output can be limited to the indicated "list of zones" or specified partitions (identically as for the **01** output type). The output can remain active for a specified time (from 01 to 99 seconds or from 01 to 99 minutes) or until the armed mode is deactivated or the alarm cleared.
- 24 - TELEPHONE LINE FAULT** - the output used when telephone messaging is doubled by radio messaging; it makes possible reporting the telephone line faults.
- 25 - 230V AC LOSS INDICATOR**
- 26 - LOW BATTERY INDICATOR** – activated when the battery voltage in three consecutive tests drops to about 11V.
- 27 - POWER SUPPLY** - the output intended for powering detectors, encoders, radio lines and other equipment with 12V direct voltage. When programming this type of output, pay special attention to permissible current-carrying capacity of each of the control panel outputs.
- 28 - FIRE POWER SUPPLY** - the output intended for powering the fire detectors. The output closely interacts with the 24H FIRE zones. If assigned to any of the control panel outputs, the function activates the fire alarm verification

mechanism. The mechanism operates as follows: the first violation cuts the fire detectors power supply off for about 15 seconds. The power-down results in reset of the violated detectors. Then, the power supply is restored, but the panel will not control the 24H FIRE zones for ten to twenty seconds because of the balancing of detectors. Next, the control panel enters the special mode of fire detectors control, which lasts about 90 seconds. If a repeated detector violation occurs during that time, a FIRE alarm will be triggered. Otherwise, the control panel will go over to the normal control of 24H FIRE zones. The output reacts to the "RESET POWER SUPPLY" function (user function 9).

- 29 - RESET POWER SUPPLY** - the output is designated to power detectors which require a periodical power cut-off until the state memory is cleared. The RESET mechanism is activated from keypad through the user function 9 (calling: [CODE][\*][9]). The voltage is cut off for 10 seconds
- 30 - TIMER** - the output is controlled by the control panel clock; it is activated / deactivated in the hours indicated by a corresponding TIMER (see *Functions programming TIMERS*).
- 31 - AUDIBLE ALARM STATUS** - the output signals the audible armed mode. Operation of the output can be limited to the indicated "list of zones" or specific partitions.
- 32 - FULL ARM STATUS** - the output is only active when all zones / partitions assigned to it are in the armed mode.
- 33 - ARM/DISARM/CLEAR ALARM** - the output signals the particular system states with, respectively, one, two, or four pulses 0.16 s each.
- 34 - KEYPAD ALARM BUZZER** - silent alarm signaling in the partition keypad.
- 35 - POWER SUPPLY IN ARMED MODE** - it functions similarly to the arm status output, but signals right after arming, not after changeover from the exit delay to the armed mode (it can be used, for example, as indicator or power supply output for microwave detectors in spaces where people stay).
- 36 - STATUS LED** – the function used in the former Soviet Union countries.
- 37 - STATUS RELAY** – the function used in the former Soviet Union countries.
- 38 - not used**
- 39 - NO GUARD CODE** – the output is activated by a timer programmed as the partition control TIMER, unless a guard code is entered within the timer specified time.
- 40 - SERVICE MODE INDICATOR** – the output is activated if the control panel is in the service mode.
- 41 - LOW BATTERY INDICATOR** – the output whose state is updated after each battery voltage test.

Output operation time (the second parameter of the function) is defined by entering a number from 01 to 99. Additionally, a corresponding option defines whether the operation time has been given in seconds or minutes.

OUTPUT OPTIONS (third parameter of the function):

No.	LED	Option
<b>1</b>	ON	output belongs to <b>partition 1</b>
	OFF	output not assigned to partition 1
<b>2</b>	ON	output belongs to <b>partition 2</b>
	OFF	output not assigned to partition 2
<b>5</b>	ON	<b>pulsating signal</b>
	OFF	steady signal
<b>6</b>	ON	operation time in <b>minutes</b>
	OFF	operation time in <b>seconds</b>
<b>7</b>	ON	LATCH type output – <b>signaling until cleared</b> (operation time irrelevant)
	OFF	output operates periodically
<b>8</b>	ON	<b>polarity +12V</b> on connected load, when the output is active
	OFF	<b>polarity 0V</b> on connected load, when the output is active

**NOTE:** The option of output assignment to a partition is to be used, when separate signaling devices have to be assigned to individual partitions. If not assigned to a partition, the alarm output will signal every alarm.

EXAMPLE:

- programming the OUT1 output for the BURGLARY/FIRE ALARM type operation, for 5 minutes, with polarity 0V in active state
- [3][1] [#] - call the function. When it is activated, the LEDs will show current output type (LEDs 1 to 4 and 5 to 8 will show two digits in binary form). The blinking LED B signals the output type being programmed.
- [0][2] [#] - enter and confirm the output number (the lower LED A starts blinking - operation time programming)
- [0][5] [#] - program and confirm the time (LEDs A and B start blinking - proceed to programming the output option)
- [6] - LED 6 goes on - the „time in minutes” option is activated
- [8] [#] - LED 8 goes off - set the "polarity" = 0V and exit the function.

**Note:** Indicating a partition in the options will determine which access code is to be used to switch off a signaling device or to control a zone. The same effect is provided by defining a list of zones controlling the outputs.

### FS-32 - programming list of zones OUT1 (BIT)

The function is used to program the output controlling zones. The selection of zones limits the output operation only to reaction to violation of those particular zones.

**The zone selection should only be used when it is necessary to have separate signaling for events from a specific zone or a group of zones.**

In no list of zones is indicated, the control panel will assume by default that the output reacts to events from any zone – for example, the BURGLARY alarm type output will signal alarms for each alarm zone in the control panel. Of course, the zone function (reaction type) is taken into consideration, e.g. the alarm signaling output will not react to a change of state of the arming zone.

**Programming the list of zones makes the control panel to skip the programmed selection of zones** when defining which zones are to activate the output.

For the outputs reacting to keypad events, the list of partitions is taken into consideration, while the list of zones is irrelevant (e.g. the 3 wrong codes alarm signaling).

The FS-32 function is used to assign zones to the OUT1 output. The programming consists in lighting up the LEDs which correspond to the zones. When the list is completed, it should be confirmed.

#### **FS-33 - programming OUT2 output**

The function allows for defining the basic parameters associated with the OUT2 output. The programming procedure is same as for the FS-31.

#### **FS-34 - programming list of zones OUT2 (BIT)**

The function programs the list of zones associated with the OUT2 output. The programming procedure is same as for the FS-32.

#### **FS-35 - programming OUT3 output**

The function allows for defining the basic parameters associated with the OUT3 output. The programming procedure is same as for the FS-31.

#### **FS-36 - programming the list of zones OUT3 (BIT)**

The function programs the list of zones associated with the OUT3 output. The programming procedure is same as for the FS-32.

#### **FS-37 - programming the OUT4 output**

The function allows for defining the basic parameters associated with the OUT4 output. The programming procedure is same as for the FS-31.

#### **FS-38 - programming list of zones OUT4 (BIT)**

The function programs the list of zones associated with the OUT4 output. The programming procedure is same as for the FS-32.

#### **FS-39 - programming OUT5 output**

The function allows for defining the basic parameters associated with the OUT5 output. The programming procedure is same as for the FS-31.

#### **FS-40 - programming list of zones OUT5 (BIT)**

The function programs the list of zones associated with the OUT5 output. The programming procedure is same as for the FS-32.

### **Functions programming parameters of transmission to monitoring stations**

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#### **FS-43 - programming station 1 number (HEX)**

#### **FS-44 - programming station 2 number (HEX)**

Numbers of up to 16 characters (digits and control codes) are programmed in the same way as the modem telephone number (FS-4).

#### **FS-45 - programming station 1 format (HEX)**

#### **FS-46 - programming station 2 format (HEX)**

The functions define the standard of event transmission to the monitoring stations. They are programmed by entering a double-character format number and confirming it with the [#] key.

## TRANSMISSION FORMATS:

- 00 - Silent Knight, Ademco slow (1400Hz, 10Bps)
- 01 - Sescoa, Franklin, DCI, Vertex (2300Hz, 20Bps)
- 02 - Silent Knight fast (1400Hz, 20Bps)
- 03 - Radionics 1400Hz
- 04 - Radionics 2300Hz
- 05 - Radionics with parity 1400Hz
- 06 - Radionics with parity 2300Hz
- 07 - Ademco Express (DTMF)
- 08 - Silent Knight, Ademco slow, extended
- 09 - Sescoa, Franklin, DCI, Vertex, extended
- 0A - Silent Knight fast, extended
- 0B - Radionics 1400Hz, extended
- 0C - Radionics 2300Hz, extended
- 0D *do not program*
- 0E Contact ID selected codes
- 0F Contact ID all codes

**NOTES:**

- *In the Contact ID (CID) format not all events have a CID code assigned to them (see Appendix D). Monitored are all events to which the CID code is assigned.*
- *In the 0E format (Contact ID selected codes) monitored are all events which have a CID code and which are assigned to, respectively, the station 1 or 2 in the corresponding event assignment functions of the control panel, while the events which have no assignment function (indicated in the „Appendix D” table (page 80) as **no assignment**) are only monitored when any non-zero monitoring code has been programmed for them.*
- *The event selection is not affected by setting the option of reporting to the station 1 or 2 in the function of programming the control panel monitoring options. The events of telephone line trouble and restoration are always monitored in both Contact ID formats, while they are not monitored in the other formats.*

**FS-47 - programming monitoring options (BIT)**

These options determine the way communication is established with the monitoring stations and how the event codes are transmitted. The programming consists in lighting up the LEDs of selected options and confirming the choice with the [#] key.

## MONITORING OPTIONS:

No.	LED	Option
<b>1</b>	1 OFF 2 OFF	<b>transmit to station 1 or station 2</b> (report is only sent to the station which first answers the call, without event sorting)
	1 ON 2 OFF	<b>transmit to station 1 only</b> , with event sorting
	1 OFF 2 ON	<b>transmit to station 2 only</b> , without event sorting
<b>2</b>	1 ON 2 ON	<b>transmit to both stations, with split reporting</b> (event sorting programmed with corresponding service functions, separately for each group of events)

<b>5</b>	ON	<b>extend reported partition event code with user number</b> (access code number)
	OFF	automatic extension with user number <b>disabled</b>
<b>6</b>	ON	<b>extend reported zone event code with user number</b> (for zone 1 - "1", for zone 2 - "2", for zone 16 no code extension)
	OFF	extension with the zone number <b>disabled</b>
<b>7</b>	ON	the panel skips sending the event code if STATION 1 fails to acknowledge receiving the information after 16 attempts.
	OFF	the panel skips sending no codes to STATION 1.
<b>8</b>	ON	the panel skips sending the event code if STATION 2 fails to acknowledge receiving the information after 16 attempts.
	OFF	the panel skips sending no codes to STATION 2.

**Notes:**

- In the case of data formats 4/1 and 3/1, do not enable the options 5 and 6.
- The options 5 and 6 are only meaningful when double-character codes are reported. If this is the case, single-character event codes are programmed (the second character being 0), and the panel, with the extension option on, will add the zone number or the user number, respectively, as the second character. The codes programmed as double-character ones will be sent in their programmed form. This solution has been adopted to facilitate programming of the event codes. As a result, programming e.g. the „zone alarm” codes (FS-60) for all the zones from which such a code is to be sent, it is sufficient to give just one (the same) character.
- The options 3 and 4 are not used.

**Functions programming identifiers****FS-48 - programming event identifier for station 1 (HEX)****FS-54 - programming event identifier for station 2 (HEX)**

The functions FS-48 and FS-54 are used to program the identifiers transmitted to the monitoring stations. They operate so as to show on the LEDs 1 to 8 two consecutive characters, which can be changed by entering new ones. When the first two characters are being programmed, the lower LED B blinks, and when the other two - the lower LED A.

For the data formats 3/1 and 3/2, the last character should be 0 - **the control panel will send characters from 1 to F, 0 not being sent.**

**NOTE:** If the monitoring station requires an identifier containing the digit **zero**, enter the character **“A”** instead of zero (e.g. the identifier **“1203”** should be entered as **“12A3”**).

**EXAMPLE:**

programming the zone event identifier for the station 1 = A243

[4][8] [#] - call the function

[\*0][2][#] - enter the first two characters of identifier

[4][3] [#] - enter the next two characters of identifier and confirm them - exit the function

## Functions programming zone event codes

The zone event codes are programmed in the functions FS-60, FS-61 and from FS-63 to FS-65. Each of them is used for programming a code of one event for each of the eight zones.

The zone event codes may be either single or double character. For the data formats 4/1 and 3/1 (and also when using the mode with code extension by zone number, see FS-47 " Monitoring options "), one of the characters must be 0. **Programming 00 will result in skipping the event when the events are being reported to the station.**

The programming consists in entering two characters (from 0 to F) for each zone and confirming them. During the programming, the keypad LEDs show value of the character entered (from 1 to 4 - the first character, and from 5 to 8 - the second character of the code) and number of the zone for which the code is programmed (LEDs A, B, A, B). After confirmation of the last zone code, the control panel exits the function .

### FS-60 - programming zone alarm codes (HEX)

The codes programmed with this function are reported when the control panel detects violation of the zone which triggers an alarm.

EXAMPLE:

programming the alarm codes for the zones 1 to 7 (codes from 41to 47), the zone 8 not being an alarm one.

- [6][0] [#] - call the function
- [4][1] [#] - program the code for zone 1
- [4][2] [#] - program the code for zone 2
- [4][3] [#] - program the code for zone 3
- [4][4] [#] - program the code for zone 4
- [4][5] [#] - program the code for zone 5
- [4][6] [#] - program the code for zone 6
- [4][7] [#] - program the code for zone 7
- [0][0] [#] - program the code for zone 8 (no event for zone 8), exit the function.

### FS-61 - programming zone tamper alarm codes (HEX)

The codes programmed with this function are reported when the control panel detects violation of the anti-tampering contact in 2EOL/NC and 2EOL/NO zones, which triggers a tamper alarm.

### FS-63 - programming zone violation codes (HEX)

The function is used for programming the zone violation codes. The zone violation code is transmitted to the monitoring station in case of:

- **violation of an armed delayed zone** (of ENTRY/EXIT, INTERIOR DELAY, DELAY type) when the control panel has started the entry delay countdown,
- **violation of an armed counting zone** – when the number of violations still does not trigger an alarm,
- **violation of a DAY/NIGHT zone when it is disarmed,**
- **violation of an armed zone when the zone already signals an alarm** - during the alarm no subsequent alarms are signaled, and the consecutive detector excitations are recorded in the event log as "zone violation"; when the alarm signaling is over, each next violation of the detector will trigger an alarm.

**NOTE:** *A trouble to program the codes of alarms and violations for all the zones may result in the station being not notified of the alarm. If one of the control panel zones has no alarm code assigned to it, and it will trigger an alarm, the excitations of subsequent detectors which occur during the alarm will be saved in the memory as*

zone violations, not alarms. If the system comprises any zones triggering an alarm of which the monitoring station is not notified, it is necessary to enter the same violation codes as for the alarms.

#### **FS-64 - programming zone RESTORE codes (HEX)**

The codes programmed with this function are sent after the zone returns to its normal state (according to the setting of corresponding zone options).

#### **FS-65 - programming zone TAMPER RESTORE codes (HEX)**

The codes programmed with this function are sent after the anti-tampering contact of detector associated with the zones 2EOL/NC and 2EOL/NO returns to its normal state.

#### **FS-67 - programming zone event assignment to station 1 (BIT)**

#### **FS-68 - programming zone event assignment to station 2 (BIT)**

When the events are reported to both monitoring stations, it is possible to point to the panel which zone events are to be sent to the station 1, and which to the station 2. The programming consists in lighting up the LEDs to indicate the events (as per the list below) and confirming the selection with the [#] key.

No.	LED	Option
<b>1</b>	ON	send ZONE ALARM code
	OFF	do not send ZONE ALARM code
<b>2</b>	ON	send ZONE TAMPER ALARM code
	OFF	do not send ZONE TAMPER ALARM code
<b>4</b>	ON	send ZONE VIOLATION ALARM code
	OFF	do not send ZONE VIOLATION ALARM code
<b>5</b>	ON	send ZONE RESTORE code
	OFF	do not send ZONE RESTORE code
<b>6</b>	ON	send ZONE TAMPER RESTORE code
	OFF	do not send ZONE TAMPER RESTORE code

The state of LEDs 3, 7 and 8 is irrelevant.

### **Functions programming partition event codes**

#### **FS-69 - programming partition 1 event codes (HEX)**

#### **FS-70 - programming partition 2 event codes (HEX)**

The partition event codes can be single- or double-character. For the data formats 4/1 and 3/1, one of the characters must be equal to 0, and the mode of extension by the user number should be deactivated (see FS-47 "Monitoring options").

When the event codes are to be double-character ones, the panel can extend some codes with the user number. The codes which are to be extended should be programmed as single-character ones (one character must be equal to 0). Additionally, the mode of extension by the user number should be activated. The code of event caused by the MASTER user is extended by "F", the codes of other users – by "1"..."C".



Where the partition is zone controlled, the event code is extended by "D". When the event is caused by the clock (see the "Functions programming TIMERS"), the event code is extended by "E".

Programming the 00 setting means that we omit sending event information to the station.

The programming consists in assigning two characters (from 1 to F, 0 meaning no digit) to each partition event and confirming them. When programming, the keypad LEDs 1 to 8 show the programmed code (1 to 4 the first character, 5 to 8 the second character of the code). The LEDs A,B,A,B show the number of event programmed, according to the list below:

NUMBER	LEDs A,B,A,B STATE	EVENT	
1	○○○◎	Arming	*
2	○○◎○	Disarming	*
3	○○◎◎	Zone bypass	*
4	○◎○○	DURESS	
5	○◎○◎	Silent arming	
6	○◎◎○	Arming with bypass	
7	○◎◎◎	Partial arming	
8	◎○○○	QUICK ARM	
9	◎○○◎	Clearing alarm	

Notes:

- The codes which can be extended by the user number are marked \*.
- The *Silent arming* code is sent in addition to the *Arming* code, which is sent with the user number.
- The *Arming with bypass* code is sent after the *Arming* code when some of the partition zones are bypassed at the moment of arming.
- The *Partial arming* code is sent in addition to the *Arming* code when in a system with two partitions one partition is getting armed and the other is disarmed.

### FS-73 - programming partition 1 event assignment to station 1 (BIT)

### FS-74 - programming partition 2 event assignment to station 1 (BIT)

The functions FS-73 and FS-74 define which events from a given partition will be reported to the first monitoring station when the mode of reporting to both stations is activated.

The programming consists in indicating the events which are to be reported, by lighting up the corresponding LEDs:

- LEDs 1 to 8 - numeration of events as in the functions FS-69 and FS-70 (events from 1 to 8) after confirmation with the [#] key, go on to program the other events (the second set) as follows:

NUMBER	EVENT
--------	-------

- LED 1 – use of control code for corresponding partition
- LED 2 – no control code for corresponding partition
- LED 3 – alarm clearing

Selection of the events should be confirmed with the [#] key.

### FS-77 - programming partition 1 event assignment to station 2 (BIT)

**FS-78 - programming partition 2 event assignment to station 2 (BIT)**

The functions FS-77 and FS-78 define which partition events will be reported to the second monitoring station when the mode of reporting to both stations is activated.

**Functions programming system event codes**

Apart from the events from zones and partitions, the CA-6 plus panel can transmit information on 28 system events (mainly related to the detected troubles ).

The codes of these events may consist of single or double characters. For the data formats 4/1 and 3/1, one of the characters must be equal to 0. Information on the events whose code has been programmed as 00 is not reported to the stations.

**FS-81 - programming system event codes - set I (HEX)**

The function enables fourteen system events to be programmed.  
The programming procedure is same as in FS-69.

Number	State of LEDs A,B,A,B	Event
1	○○○⊗	AC loss
2	○○⊗○	AC restore
3	○○⊗⊗	Low battery
4	○⊗○○	Battery restore
5	○⊗○⊗	Output OUT1 trouble
6	○⊗⊗○	Output OUT1 restore
7	○⊗⊗⊗	Output OUT2 trouble
8	⊗○○○	Output OUT2 restore
9	⊗○○⊗	Output OUT3 trouble
10	⊗○⊗○	Output OUT3 restore
11	⊗○⊗⊗	Enter service mode
12	⊗⊗○○	Exit service mode
13	⊗⊗○⊗	Start DOWNLOADING
14	⊗⊗⊗○	End DOWNLOADING

**FS-82 – programming system event codes - set II (HEX)**

The function enables the other system events to be programmed.  
The programming procedure is same as in FS-69.

Number	State of LEDs A,B,A,B	Event
1	○○○⊗	Keypad power supply trouble
2	○○⊗○	Keypad power supply restore
3	○○⊗⊗	Transmission problems
4	○⊗○○	Event log overflow
5	○⊗○⊗	Loss of time
6	○⊗⊗○	RAM memory fault
7	○⊗⊗⊗	System restart
8	⊗○○○	Test transmission
9	⊗○○⊗	Clock setting *
10	⊗○⊗○	Keypad FIRE alarm
11	⊗○⊗⊗	Keypad PANIC alarm
12	⊗⊗○○	Keypad AUX. alarm
13	⊗⊗○⊗	Keypad tamper alarm
14	⊗⊗⊗○	3 wrong codes alarm

## Notes:

- The code 3 is recorded in the event log when the control panel is unable to establish communication with the station. In that case, the control panel will retry after 60 seconds to establish connection. When it gets through, the control panel will transmit all the unsent events from the memory. The events are sent by the panel in the order of their occurrence (the oldest event is sent first).
- The code 4 is recorded in the event log when lack of communication with the station lasted so long that all the memory intended for the events (255 in all) has been filled up and the oldest events have been erased.
- The code 9 can be extended by the control panel with the user number.

**FS-83 - programming system event assignment to station 1 (BIT)**

When the mode of notifying both stations is active, it is possible to determine for most events, whether they will be transmitted to the station 1, station 2, or to both stations. The other system events are reported to both stations.

The programming is a three-stage procedure, which consists in specifying events which are to be sent to the station 1.

The LEDs 1 to 8 show the following events:

- |                         |  |
|-------------------------|--|
| 1 - AC loss             |  |
| 2 - AC restore          |  |
| 3 - Low battery         |  |
| 4 - Battery restore     |  |
| 5 - Output OUT1 trouble |  |
| 6 - Output OUT1 restore |  |
| 7 - Output OUT2 trouble |  |
| 8 - Output OUT2 restore | in the first stage (lower LED B is blinking),      |
| 1 - OUT3 output trouble |  |
| 2 - OUT3 output restore |  |
| 3 - Enter service mode  |  |
| 4 - Exit service mode   |  |
| 5 - Start DOWNLOADING   |  |
| 6 - Stop DOWNLOADING    | in the second stage (lower LED A is blinking),     |
| 1 - Keypad FIRE alarm   |  |
| 2 - Keypad PANIC alarm  |  |
| 3 - Keypad AUX alarm    |  |
| 4 - Keypad tamper alarm |  |
| 5 - 3 wrong codes alarm | in the third stage (lower LEDs A, B are blinking). |

**FS-84 - programming system event assignment to station 2 (BIT)**

The function makes it possible to select system events sent to the station 2, when the mode of reporting to both stations is active. The programming procedure is identical as in FS-83.

**FS-85 - programming test transmission time (DEC)**

The function sets two time parameters which define the moments of sending the test transmission code to the monitoring station.

The first parameter (two two-digit numbers: hour, minute) enables the station to check if the control panel clock works properly. The mechanism sending the code every day at the same time can be disabled by programming a wrong time (for example, 99.99).

The second parameter (three two-digit numbers: number of days, hours, minutes) defines the time counted from the last transmission to the station, after which test code will be sent by the control panel. After occurrence in the system of any event whose code will be sent, the panel starts counting the time again. This mechanism can be disabled by programming 00.00.00.

The programming consists in entering five two-digit numbers. After confirmation of all the numbers, the panel exits the function.

**EXMAPLE:**

programming the test code to be sent at 1:45 (clock test) and after two hours since the last transmission (communication test).

- [8][5] [#] - call the function,
- [0][1] [#] - enter the hours,
- [4][5] [#] - enter the minutes of clock test time,
- [0][0] [#] - enter the number of days,
- [0][2] [#] - enter the number of hours,
- [0][0] [#] - enter the number of minutes of the communication test time and exit the function.

**FS-86 - programming the „AC loss” report delay (DEC)**

The function defines the time from the mains supply loss after which the panel will send an „AC loss” message to the monitoring station. The delay time is programmed in minutes, within the range from 01 to 99 minutes.

**Functions programming dialer**

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**FS-87 - programming telephone number 1 (HEX)**

**FS-88 - programming telephone number 2 (HEX)**

**FS-89 - programming telephone number 3 (HEX)**

**FS-90 - programming telephone number 4 (HEX)**

The functions FS-87 to FS-90 are used to program the telephone numbers to which the control panel sends alarm messages.

Each telephone number can have up to sixteen digits. It is programmed by entering the consecutive digits in pairs. The LEDs A,B,A,B show (in binary form) which pair of digits is being programmed, while the LEDs 1 to 4 and 5 to 8 show (also in binary firm) the values of programmed digits.

A telephone number can also contain special characters, used to control the dialing.

The following functions have been assigned to particular codes:

- A(HEX) - end of telephone number ..... (combination [\*][0])
- B(HEX) - switch to pulse dialing ..... (combination [\*][1])
- C(HEX) - switch to tone dialing ..... (combination [\*][2])
- D(HEX) - wait for dial tone ..... (combination [\*][3])
- E(HEX) - short pause (3 seconds) ..... (combination [\*][4])
- F(HEX) - long pause (10 seconds) ..... (combination [\*][5])

## Notes:

- Prior to dialing the telephone number, **do not put** the control characters **B**, **C** and **D** (the panel performs corresponding operations automatically, according to the options set, see FS 5).
- If the telephone number is shorter than 16 characters, it **must** be ended with the code **A**.
- During telephone messaging, the waiting for dial tone (code D) does not decrease the counter of queues and retries in case of the busy signal. Example: the panel is connected to an extension line, the programmed telephone number is 0D5564031 (“0” gives access to the outside line) – if the outside line is busy, the control panel will dial the number until it gets through. Only when the number has been dialed in full, the busy or no answer condition will change the counters.

## EXAMPLE:

programming the number 0-556 40 31 (0D 55 64 03 1A)

[8][7] [#] - call the function

[0][\*3][#] - enter the first two characters

[5][5] [#] - enter the next two characters

[6][4] [#] - enter the next two characters

[0][3] [#] - enter the next two characters

[1][\*0][#] - enter the last two characters (the last digit and the end-of-number character )

[\*] [#] - on entering 12 characters, exit the function.

**FS-95 - programming assignment of partitions and messages (BIT)**

At the moment an alarm occurs, the control panel can send an alarm message to four telephone numbers. As the system can be divided into independent partitions, the messaging should depend on which partition is alarming. The FS-95 function associates telephone numbers with partitions and defines which message is to be sent.

The programming consists in that each telephone number is assigned partitions and number of message to be sent. The telephone number (from 1 to 4, in binary form) is indicated by the LEDs A,B,A,B.

The LEDs 1 and 2 show the assignment of consecutive numbers to partitions:

- 1 - telephone number for partition 1
- 2 - telephone number for partition 2

The LEDs 5 to 6 show the message sent to a consecutive number:

- 5 - message 1 for paging system
- 6 - message 2 for paging system

NOTES: If no message for the paging system is assigned to the number, the panel will send a voice message from the synthesizer.

A telephone number can be associated with one or two partitions.

**EXAMPLE:**

programming of the following settings (assuming that LEDs 1 to 8 for all numbers are off)

- 1<sup>st</sup> telephone number - message No. 1 (pager), with alarm in partitions 1 & 2,
- 2<sup>nd</sup> telephone number - message No. 1 (pager), with alarm in partition 1,
- 3<sup>rd</sup> and 4<sup>th</sup> tel. number - voice message from synthesizer, after alarm in partition 2

- [9][5] [#] - call the function (the lower LED B is blinking - 1<sup>st</sup> number)
- [1] - LED 1 goes on (number 1 assigned to partition 1)
  - [2] - LED 2 goes on (number 1 assigned to partition 2)
  - [5] - LED 5 goes on (message 1 assigned to number 1)
  - [#] - confirm assignment for number 1 (LED A is blinking - 2<sup>nd</sup> number)
- [1] - LED 1 goes on (number 2 assigned to partition 1)
  - [6] - LED 6 goes on (message 2 assigned to number 2)
  - [#] - confirm assignment for number 2 (LEDs A & B are blinking - 3<sup>rd</sup> number)
- [2] - LED 2 goes on (number 3 assigned to partition 2)
  - [#] - confirm assignment for number 3 (the upper LED B is blinking - 4<sup>th</sup> number)
- [2] - LED 2 goes on (number 4 assigned to partition 2)
  - [#] - confirm assignment for number 4 and exit the function.

**FS-96 - programming message 1 (POLPAGER format)**

**FS-97 - programming message 2 (POLPAGER)**

The message is programmed in the same way as with direct telephone messaging to the POLPAGER receiver. The control panel stores in its memory the consecutively depressed keys, and when transmitting the message, it generates corresponding two-tone signals, according to the telephony standard.

After calling the function, the panel enters the numerical mode (identically, as the POLPAGER exchange). Each depression of a key means that a corresponding digit has been added to the message.

Q. Z 1	A B C 2	D E F 3
G H I 4	J K L 5	M N O 6
P R S 7	T U V 8	W X Y 9
*	- 0	#

Changeover to the text mode follows a double depression of the [\*] key. When in the text mode, each key (from 1 to 9) has three letters assigned to it. If you want to choose the middle letter, press the key with that letter. If you want to choose the letter on the left side of a key, press that key and [\*]. The letter on the right side of a key can be accessed by pressing that key and [#]. To access the space, press the [0] key. The dash is accessible by pressing the [0][\*] keys. Changeover from the text to numerical mode is effected after pressing the [0][#] keys.

The message is ended after pressing the [#] key when the control panel is in the numerical mode, while the next depression of [#] results in exiting the function. The control panel stores in memory 96 keystrokes. At an attempt to enter a longer message, the panel quits the function (adding # or 0## if it was in the text mode).

**EXAMPLE:**

programming the ALARM message

[9][6] [#] - call the function (LED 9 is blinking - programming the 1<sup>st</sup> message)

[\*] [\*] - activate the text mode

[2] [\*] - A

[5] [#] - L

[2] [\*] - A

[7] - R

[6] [\*] - M

[0] [#] - change over to the numerical mode

    [#] - end the message

    [#] - exit the function.

**FS-100 - programming number of queues and retries in a queue (DEC)**

The function is used to program two parameters of the telephone communicator which define how the messaging works. These parameters are:

- number of message queues (from 1 to 7) - setting a greater number gives a better reliability of reporting,
- number of dialing retries within one queue (from 1 to 9, and if 0 is entered - until a successful transmission). This parameter has been introduced so as to avoid blocking of the telephone line continuously dialing the number which cannot be reached (when nobody answers the call or the panel receives the busy signal all the time, etc.).

The programming consists in entering two digits. The first of them refers to the number of retries, the second - to the number of message queues. Having programmed these parameters, press the [#] key to exit the function.

**FS-101 - programming number of rings before answer (DEC)**

The function sets the number of rings after which the CA-6 plus control panel will answer the call in order to report the alarm system status or to establish communication with the computer. The programming consists in entering a number from 01 to 15 and confirming it with the [#] key.

Depending on how the answering option bit is set (function FS 5, 8 bit in the second set of options), the control panel will answer the call immediately after detecting the programmed number of rings, or on the first ring detected after an interval lasting less than 5 minutes from detecting the programmed number of rings ("double call").

**Having answered a call in the "single call" mode, the panel will not answer any more calls for about 5 minutes so as to enable access to other equipment connected to the telephone line (e.g. automatic answering system, fax/modem). When the option to establish communication with the control panel by the computer is disabled, and the call answering is on, the control panel will only answer the calls when all defined partitions are armed.**

**Functions programming TIMERS**

The CA-6 plus control panel is equipped with four TIMERS, which compare on a current basis the panel clock with the times set on the TIMERS. If the times are consistent, the timers perform the functions assigned to them.

**FS-102 - programming TIMER 1 (DEC)**

The function defines the TIMER 1 ON/OFF hour and minute. The programming consists in entering four two-digit numbers, the first two denoting the ON time (hour,

minute), and the other two the OFF time (hour, minute). When one of the times is set at the value of 99:99, it is possible to use the TIMER for starting only or for stopping only.

**EXAMPLE:**

programming the TIMER 1 - on 16:30, off 06:30

[1][0][2][#] - call the function

[1][6] [#] - program the on hours

[3][0] [#] - program the on minutes

[0][6] [#] - program the off hours

[3][0] [#] - program the off minutes and exit the function.

**FS-103 - programming TIMER 2 (DEC)**

**FS-104 - programming TIMER 3 (DEC)**

**FS-105 - programming TIMER 4 (DEC)**

**FS-106 - programming TIMER functions (HEX)**

The function defines how the timers are used. They can control outputs or partitions.

The programming consists in entering four characters from 0 to 9 (twice two characters), the first character defining the function of TIMER 1, the second - TIMER 2, the third - TIMER 3, and the fourth - TIMER 4.

**Note:** The outputs indicated in this function are TIMER controlled irrespective of their type – as distinct from the CA-10 plus control panel, where the timers control only the TIMER type outputs.

The characters entered have the following meaning:

- 0 - TIMER not used
- 1 - controls output OUT1
- 2 - controls output OUT2
- 3 - controls output OUT3
- 4 - controls output OUT4
- 5 - controls output OUT5
- 7 - partition control timer (guard control)
- 8 - controls partition 1
- 9 - controls partition 2

*Note: Do not program the values 6 and A to F. The partition control function (7) can only be programmed for timer 1 (partition 1 control) and timer 2 (partition 2 control).*

**The Guard rounds control** requires that the following be programmed:

- **guard code** in the partition controlled (a code with authority level 5 – it also performs the function of activating the SWITCH MONO)
- **partition control timer** – the hour and minute set for switching on this timer defines the maximum time that may elapse since the last time the guard code was entered - if it is exceeded, the “no control code” event will be recorded in the memory, the information will be sent to the monitoring station, and the “no partition control code” type output will be activated

The partition control timer permits determination of the time during which the guard must make his round and enter his code into the keypad (which is saved in the event log as “entry/exit ”). If the guard fails to make his round, suitable signaling will be initiated.



**EXAMPLE:**

programming the function: TIMER1 - controls partition 1, TIMER 2 - controls OUT4 output, TIMER 3 and TIMER 4 - control OUT5 output

[1][0][6][#] - call the function

[8][4] [#] - program the functions of timers 1 and 2

[5][5] [#] - program the functions of timers 3 and 4

## Special functions

### FS-107 - restoration of default settings

Calling this function will restore all the default settings of the control panel parameters and will automatically program current address of the keypad. The service code is set as 12345. The function does not affect the user access codes.

Description of the other parameters can be found at the beginning of section "Programming - Service Functions".

### FS-108 - clearing event log

Calling this function will erase the memory of events.

### FS-109 - programming default identification codes

Calling this function will set the codes of control panel and computer (see FS-2, FS-3), which are required for the panel to establish communication with the computer. These settings are used for testing the control panel.

### FS-110 - restoring default codes

Calling this function will erase all the user access codes and restore the default MASTER code (1234) and the default service code (12345).

### FS-111 - programming keypad address (BIT)

The keypad of CA-6 plus panel has its individual address, which is set with jumpers. The panel imports this address together with other keypad data (zone state, depressed keys, anti-tampering) and compares with the address programmed in the nonvolatile memory. If a difference is detected, a tamper alarm is triggered. The keypad with incorrect address is not recognized by the control panel.

The keypad address is set by the control panel automatically when the default settings are being programmed (the panel reads out setting of the jumpers and stores it in memory). The function FS-111 enables the address programming to be made from keypad.

The programming consists in lighting up the LEDs 1 to 4, which correspond to the jumper settings. The settings are confirmed with the [#] key.

The [\*] key enables you to exit the function.

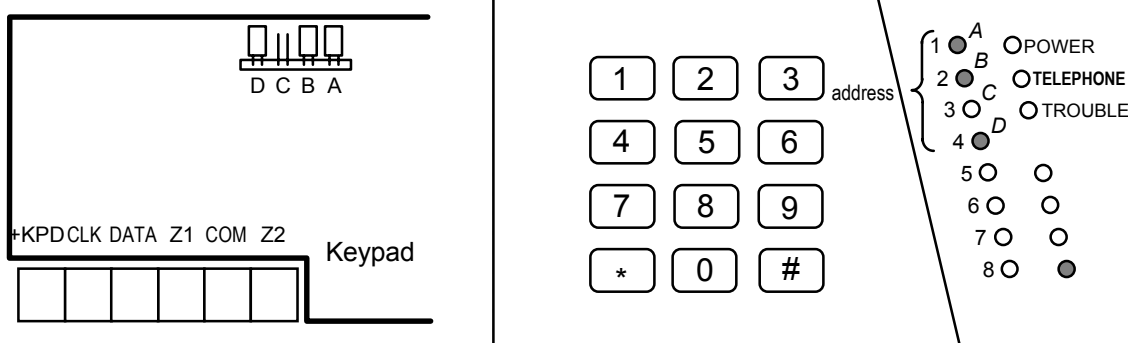


Fig.11 - Jumper setting and corresponding LEDs during programming procedure..

**Notes:**

- The control panel does not support a keypad in which either all jumpers or no jumpers are set.
- When programming the keypad address be particularly careful, as having programmed a wrong address may trigger alarm and loss of the ability to control the panel from the keypad.
- The new address (as most of the programmed parameters of the panel) will become valid after exiting the service mode or - when the panel is being programmed from the computer - after the data are sent.

Automatic readout of the keypad address without changing the other control panel parameters is possible owing to the function FS-124.

**FS-112 - start of programming from computer in local mode**

The function starts the panel programming through a modem or RS-232 TTL interface without a need to connect the panel and the computer by telephone lines. The function is called upon a prompt from the computer. Prior to using the function, hook up the control panel to the computer as shown in Fig. 12, or with the special RS cable. Start the proprietary DLOAD10 program on the computer. After calling the function, the panel will first try to establish connection through the RS interface, and if it fails to do so, via the telephone line.

**Programming the panel through RS TTL serial port**

The programming is possible with the use of a special cable intended for programming the CA-5 and CA-6 plus control panels. To run the software, select a suitable COM port number in the DLOAD10 program (CONFIGURATION window). Then, from the **Communication** menu, select the →**Local connection with...**, and, subsequently, select the control panel type →**CA6v5 - RS-232**. Activate the service function FS 112 in the control panel. Consistency is required between the panel and the computer communication codes (FS 2 and FS 3) programmed in the panel and included in the DLOAD10 program data.

**Programming with the use of modem**

In the menu **File**, item →**Open...** or →**New**, select the control panel type →**CA-6**, in the menu **Communication** - the mode →**Modem**, and in the window **Initializing modem** - the connection mode →**Local** - the computer will prompt you to call the function FS-112.

After calling the function (the TROUBLE LED is on), the control panel tries to establish communication with the computer. If it fails to do so within about 20 seconds, the control panel will exit the function signaling an error (two long beeps). When the communication is established (four short and one long beeps), the control panel will exit the function to the service mode.

The online communication is maintained until a corresponding command is received from the computer.

To terminate the communication, quit the [\*] key for about 3 seconds.

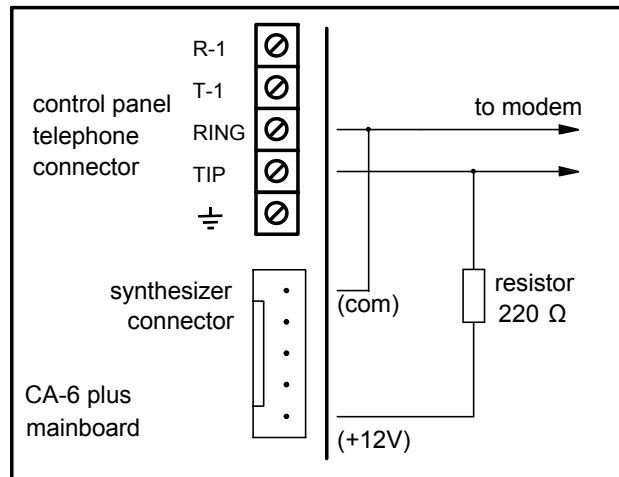


Fig. 12 - Connecting the panel to modem during local mode programming.

The „CA-6 without keypad” command in the „Initializing modem” window, DLOAD10 program, enables to automatically run the program from the computer with no need for operating the control panel from keypad and calling the function FS-112. This feature can be disabled by the installer with software means, with the use of function FS-131 (option 2).

#### FS-117 - permissible telephone line loss delay (DEC)

The function defines how many minutes may elapse from the low voltage condition on the telephone line to the moment the panel reports a trouble. Lifting the handset of a telephone connected to the same telephone line is also considered to be the telephone line loss.

The programming consists in entering a two-digit number from 00 to 99 minutes. If 00 is programmed, the panel will not test the telephone line voltage.

##### EXAMPLE:

programming a twenty-minute delay

[1][1][7][#] - call the function

[2][0] [#] - program the delay

#### FS-118 - parameters of pager station signals (HEX)

The function defines the parameters of the answer signals generated by the automatic pager station. As different answer signals are used in each system, it is necessary to specify the signal parameters of the system to which the control panel transmits its messages. If parameters of those signals change, it will be sufficient to specify new data.

The programming consists in entering six two-character codes which are suitable for the given paging system. After a restart with the function FS-107, the POLPAGER system parameters should be entered.

The particular systems should be programmed as follows:

- POLPAGER - [118]# [3B]#[42]#[0B]#[0F]#[73]#[80]#
- TELEPAGE - [118]# [2B]#[2E]#[0E]#[14]#[30]#[3A]#
- EASYCALL - [118]# [37]#[3D]#[07]#[0B]#[B6]#[C8]#
- METROBIP - [118]# [16]#[1A]#[13]#[17]#[0B]#[0F]#

#### FS-123 – counter count-up times

The function allows programming time intervals for the counters 1, 2 and 3, during which the counters must count up the programmed number of pulses to trigger an

alarm. If the number of violations is less than the preset value, the counters will be reset after that time. The programming consists in entering three numbers from between 1 to 255 seconds (each of them should be confirmed with the [#] key), similarly as in FS-24.

#### **FS-124 - keypad address auto-detect**

The function enables the keypad address to be automatically detected without changing the other parameters.

#### **FS-125 - programming CTL input functions (HEX)**

The CTL steering input of the CA-6 plus panel can perform one of the following functions:

- 1 - arming,
- 2 - disarming,
- 3 - fire alarm,
- 4 - panic alarm,
- 5 - auxiliary alarm,
- 6 - arming / disarming,
- 7 - clearing alarm (no disarming).

Two digits are programmed. The first of them defines the input option (from 1 to 7), the second - which zones will be armed or disarmed:

- 0 - CTL does not arm/disarm,
- 1 - arming/disarming partition 1,
- 2 - arming/disarming partition 2,
- 3 - arming/disarming both partitions.

*Note: Do not program any values beyond the permissible range.*

The input reacts to a momentary shorting to ground (abt. 0.5 sec.). If, for instance, the function 6 (arming/disarming) has been set, the shorting to ground will arm the system, while disarming will take place after the connection is opened and then shorted again.

The input violation will generate the following event codes:

- for input functions 3,4 or 5 - codes of keypad alarms programmed with function FS-82,
- for the other functions - codes of arming or disarming (alarm) through the input with „D” extension (programmed with functions FS-69 and FS-70).

#### **FS-126- programming partition control codes (HEX).**

Four event codes are programmed in the following order:

- entry/exit partition 1 (enter control code - partition 1)
- entry/exit partition 2 (enter control code - partition 2)
- no control code - partition 1
- no control code - partition 2

If the "entry/exit" codes are one-digit numbers, they can be automatically extended by the user number.

#### **FS-127- zones bypassed on no exit from partition 1**

#### **FS-128- zones bypassed on no exit from partition 2**

The EXIT-BYPASS functions 127 and 128 make it possible to program for each partition the zones which will be automatically bypassed if, after arming, there is no violation of the ENTRY/EXIT type zone during the exit delay (after arming the system,

the user **has not left the site** and has not violated any detector in the ENTRY/EXIT type zone.

### FS-131 - programming additional options (BIT)

FIRST SET OF OPTIONS (the lower LED B is blinking)

No.	LED	OPTION
1	on	Service mode disabled
	off	Service mode enabled
2	on	DWNL disabled
	off	DWNL enabled
3	on	Pulse dialing ration 1:1,5
	off	Pulse dialing ration 1:2
4	on	DTMF (MST-1) module supported
	off	DTMF module not supported

*NOTE: The options 5 to 8 from the first set of options are irrelevant in the CA-6 plus.*

**Option 1** refers to disabling the hardware access to the service mode. If this option is selected, it is only possible to enter the service mode by using the service access code. If the service code is lost, unblocking the control panel will cause loss of all settings - the panel will return to its default settings, as after calling the service functions FS 107 and FS-110. To enter the service mode not knowing the code, do the following:

- switch off power supply (mains and battery),
- short the RESET pins (J13) with a jumper
- switch on power supply,
- wait about 60 seconds ( $\pm 5$  sec.) and remove the jumper,
- enter from keypad the code: [1][2][3][4][5] (the code should be entered within 15 seconds) and finish by pressing the [#] or [\*] key.

After these operations, the control panel should return to its default settings and remain in the service mode.

**Option 2** refers to disabling the hardware starting of the process of programming the panel settings in local mode, which requires no use of keypad or calling of function FS-112.

**Option 3** refers to the control panel dialer and defines the pulse dialing ratio during pulse dialing of a telephone number. Selecting the option sets its value at 1:1.5. If the option is not selected, the ratio is 1:2.

*NOTE: In Poland, the telecommunication standard requires that the pulse dialing ratio be set at 1:2.*

**Option 4** refers to the panel work with the module that enables the panel to be operated via a telephone generating DTMF signals. For such a work to be possible, it is necessary to activate the option 3 from the first set in FS5 („telephone answering”).

SECOND SET OF OPTIONS (the lower LED A is blinking)

No.	LCD	LED	OPTION
1		on	Do not allow arming during battery trouble.
		off	Allow arming during battery trouble.
2		on	Automatic reset of zone bypassing at midnight (00:00)
		off	Do not reset zone bypassing AUTORESET 1/3

NOTE: Setting of LEDs 3-8 in the second set of options is irrelevant.

**Option 1** disables the possibility of arming, if the control panel has detected a battery trouble.

When selected, the **option 2** will reset the counters of the zones bypassed after 1 or 3 alarms at 00:00 hour.

**FS-132 - programming clock correction (DEC)**

As time measurement by the control panel internal clock may differ from the real value, provision has been made for making a daily time correction. The function makes it possible to correct the time measurement by ±19 seconds within 24 hours. For programming the time correction, use the function FS132 to enter the value of daily time shift of internal clock:

- 00 no correction
- 01 +1 second
- 02 +2 seconds
- ...
- 19 +19 seconds
- 81 -1 second
- 82 -2 seconds
- ...
- 99 -19 seconds

EXAMPLE:

program the time correction by -12 seconds  
 [1][3][2] [#] - call the function  
 [9][2] [#] - enter the correction value (minus 12 seconds)

**FS-133- reviewing panel real-time clock (no change possible)**

After calling the function, the LEDs 1 to 8 will show the real time hour (two digits in binary code), LEDs 1-4 showing the first digit, LEDs 5-8 - the second digit.

Example:                    1 2 3 4 5 6 7 8  
                               ○○○◎○○◎◎      13.00 hour

In order to check the other indications of the clock and calendar, press the appropriate keys on keypad in accordance with the following dependence:

1. hours,
2. minutes,
3. seconds,
4. day,
5. month,
6. year (two last digits).

Use the [#] or [\*] key to terminate the function.

## Restoring default settings, erasing codes

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If it is necessary to restore the default settings, you should enter the service mode and call the service functions:

- FS-107 - in order to restore all the default settings, except for the user access codes,
- FS-110 - to restore the partition master codes, the other codes being erased.

If the service mode is inaccessible (for example, when the control panel stopped responding to keypad commands because of a programming error, or the service code has been lost), follow the procedure below:

1. Switch off power supply (emergency and mains).
2. Set a jumper on J13 RESET pins.
3. Switch on mains supply.
4. On hearing a beep in the keypad, remove the jumper from J13 pins (the panel will enter the service mode).
5. Perform function FS 107.
6. Perform function FS 110.
7. Exit the service mode or proceed with programming the control panel.

**Note:** *Similarly as in other SATEL control panels, **shorting the pins and powering up alone will not restore any parameters !** However, it will activate the service mode thus making it possible to check how the control panel has been programmed, and to analyze any programming errors .*

The feature of hardware access to the service mode can be disabled by software means using the service function FS-131 (option 1).

## **REMOTE PROGRAMMING - DLOAD10**

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The DLOAD10 program delivered with the control panel is designed for programming the CA-5, CA-6, CA-6 plus, CA-10 and CA-10 plus panels, as well as the RX2K and RX4K radio controllers, from the computer. Additionally, the program makes it possible to create documentation of alarm systems, sets of settings for various configurations ("patterns" which facilitate the programming of new systems), event sets for each system, as well as to remotely operate the control panel in the same way as with the keypads.

The program is designed for IBM PC/AT compatible computers. It works in any computer hardware configuration in the **WINDOWS** (9x/ME/2000) environment. It is recommended that the program be installed on the computer hard disk.

The control panel communicates with the computer through the RS-232 TTL interface or via the telephone line. For telephone communication with the panel, the program uses a modem controlled by one of the COM ports (internal or external), compatible with the HAYES "AT Command" standard. Communication with the control panel is possible in the **CCITT V.21** or **BELL 103** standard (at 300 Bps). As the control panel transmits data only with a speed of 300 bauds, the modem must support this speed of operation.


**Usually a suitable modem configuration is necessary, with disabling the transmission standard negotiating function and forcing the transmission speed of 300 Bps.**

In order to install the program, run the **D10setup.exe** program from the floppy disk which is delivered with the control panel. The installation completed, start the program. Access to the program is protected with an **access code**. After installation, the code is **1234** and can be changed to any sequence of 16 alphanumeric characters. As long as it has its factory form, you can start the program (with default code 1234) by pressing the „ENTER“ key (no access code need to be entered).

Having started the program, you should configure it and initialize in the computer the work of RS port or modem by means of which the control panel will be programmed. By default, the program opens a window which enables the CA-10 plus panel to be programmed. Your next step can be selecting the CA-6 plus panel and starting the connection (either remote or local).

A HELP system is provided which facilitates operating of the program, as well as the very programming of control panel parameters. The system is accessible from the „**HELP**“ menu, or by pressing the **F1** key on computer keyboard. To get an instant access to more detailed information, first select the required element in the program window (by moving the mouse pointer to and left-clicking on it), and then press the F1 key.

### **PROGRAM CONFIGURATION TO ESTABLISH COMMUNICATION WITH THE PANEL**

In order to begin configuration, click on the  icon to open the „Configuration“ window. The „Port RS-232“ tab permits selecting the computer port number in the case of direct programming through the panel RS port. If the control panel is being programmed by means of the modem, select the „Modem“ tab and click on the „Details“ button.

After opening the „**Modem**“ window, select the corresponding modem type or click on the „**! Change**“ button to enter data according to the documentation of your modem. Entering a new name and initialization path, and confirming it with the „**OK**“ button makes it possible to add new settings to the list of modems. After clicking on the „! Change“ button you can also change the communication port number and the maximum transmission rate.



The „**Test**” button permits checking interaction between the modem and the program – it opens a window containing information on modem initialization.

Having properly initialized the operation, close the configuration windows.

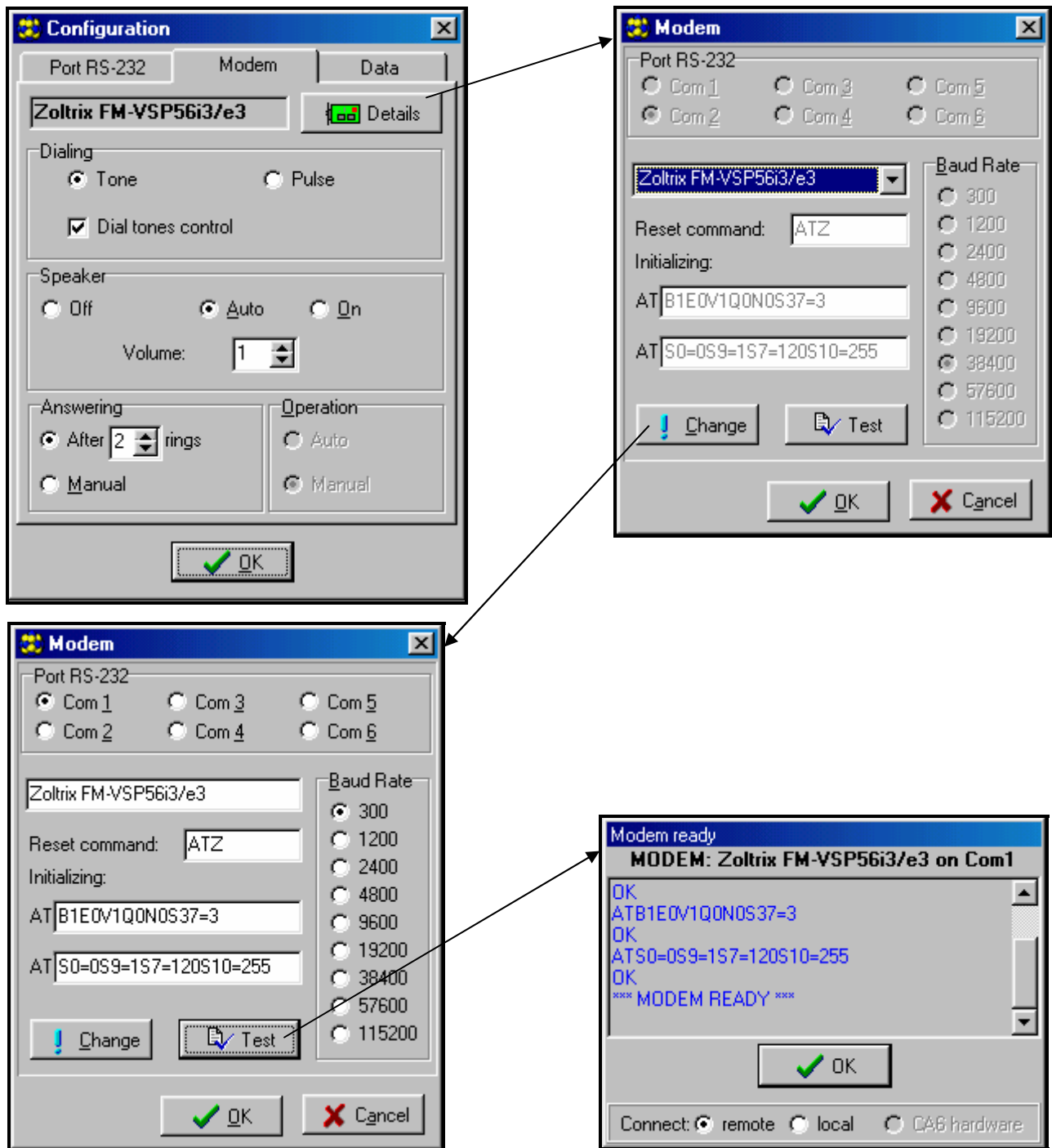




Fig. 13. – Dialog boxes in DLOAD10 program.

In order to start communication in local mode, follow instructions attached to the service function FS-112.

The modem communication can be started by clicking on the  icon (or selecting the „MODEM” command from the „COMMUNICATION” menu). The program will open a dialog box enabling connection to be established and will prompt the further course of action. For details see the section „Remote programming - DOWNLOADING”.

The type of control panel is recognized automatically on establishing connection, or can be selected through the “File” menu.

Calling the function of reading the control panel data (icon ) after the communication has been established may speed up the subsequent process of saving the changes made in the control panel programming.

**Table of HEX characters**

Decimal format (DEC)	Binary format (BIN)	Hexadecimal format (HEX)	State of LEDs 1-4 or 5-8 or ABAB
0	0000	0	○○○○
1	0001	1	○○○◎
2	0010	2	○○◎○
3	0011	3	○○◎◎
4	0100	4	○◎○○
5	0101	5	○◎○◎
6	0110	6	○◎◎○
7	0111	7	○◎◎◎
8	1000	8	◎○○○
9	1001	9	◎○○◎
10	1010	A	◎○◎○
11	1011	B	◎○◎◎
12	1100	C	◎◎○○
13	1101	D	◎◎○◎
14	1110	E	◎◎◎○
15	1111	F	◎◎◎◎

Note: When programming the zone sensitivities, the value to be programmed for a given zone is calculated as follows:  $PARAMETER = (value \text{ acc. to LEDs } 1-4) * 16 + (value \text{ acc. to LEDs } 5-8)$ .

Example:

State of LEDs 1 to 8: ◎○◎○○◎○○ = A4  
 $PARAMETER = 10 * 16 + 4 = 164$

## States signaled with LEDs

---

LEDs 1 to 8:

- off - zone free (not violated)
- on - zone violated
- on with a short off period every 2 seconds - anti-tamper circuit violated in 2EOL/NC or 2EOL/NO type zones
- fast blinking - zone has triggered an alarm
- flashing every 2 seconds - zone anti-tamper circuit has triggered an alarm
- slow blinking - zone bypassed

Other LEDs:

- POWER on - mains and battery O.K.,
- POWER blinking - low battery,
- POWER off - AC loss,
- TELEPHONE on - control panel on line,
- TROUBLE blinking - control panel has detected some troubles,
- POWER, TELEPHONE and TROUBLE blinking - control panel signals entering the user function,
- ARMED blinking - exit delay for partition A or B,
- ARMED on - partition A or B armed.
- ALARM blinking - alarm was triggered in the zone (when none of the LEDs 1 to 8 is blinking, the alarm cause will be shown by the function "Reviewing the alarm memory").

## States signaled with sound

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The signals produced to confirm the operation on the keypad:

- **three short** - system arming/disarming confirmation, deactivating type 13 (BI switch) output,
- **two long** - wrong access code, canceling a function or incorrect data for a function,
- **three long** - an attempt to arm the system when it is not ready (with violated PRIORITY option zones - see Arming),
- **four short, one long** - correct user function completion, activating type 13 (BI switch) output, or activating type 12 (MONO switch) output.

System events signaling:

- **continuous signal** - alarm condition,
- **intermittent signal** - fire alarm,
- **one short signal every 3 seconds** - entry time countdown,
- **one long signal every 3 seconds** - exit time countdown,
- **two short signals every 3 seconds** - trouble,
- **five short** - CHIME zone violated,
- **five long** - DAY/NIGHT zone violated.

The installer determines which events and in which keypads are to be signaled acoustically.

## CA-6 plus List of Events

The table contains event names and information on extendability of the event code. Shown in a separate column are codes in the Contact ID (CID) format and information on the OE format (Contact ID selected codes - see description of the functions FS-45 and FS-46).

It.	Events - Zones	Extendable by the number of	CID code	OE format
1.	Zone alarm	zone	1,110 1,130 1,150 1,122 1,134 1,123 1,135	
2.	Zone tamper alarm	zone	1,144 1,373	
3.	Violation on „autoreset”	zone		
4.	Zone violation restore	zone		
5.	Zone tamper restore	zone	3,144 3,373	
6.	DAY/NIGHT zone violation	zone	1,135	
7.	Zone violation	zone		
	<b>Events - Partitions 1 and 2 (A &amp; B)</b>			
1.	Arming	user	3,401	
2.	Disarming	user	1,401	
3.	Zone bypass	user	1,574	
4.	Alarm DURESS	user (CID only)	1,121	
5.	Silent arming			
6.	Arming with zone bypass			
7.	Partition arming			
8.	Quick arming		3,408	
9.	Guard code used (SWITCH MONO)			
10.	No guard code		1,126	
11.	Alarm clearing	user (CID only)	1,406	

It.	Events - System	Extendable by the number of	CID code	0E format
1.	Telephone line trouble			
2.	Telephone line restore			
3.	Clock loss		3,625	no assignment
4.	AC power loss		1,301	
5.	AC power restore		3,301	
6.	Test transmission		1,602	no assignment
7.	Battery trouble		1,302	
8.	Battery OK		3,302	
9.	OUT 1 overload		1,320 (1)	
10.	OUT 1 OK.		3,320 (1)	
11.	OUT 2 overload		1,320 (2)	
12.	OUT 2 OK.		3,320 (2)	
13.	OUT 3 overload		1,320 (3)	
14.	OUT 3 OK.		3,320 (3)	
15.	Reporting trouble		1,350	no assignment
16.	Service mode start		1,627	
17.	Service mode end		1,628	
18.	External DOWNLOADING start		1,410	
19.	DOWNLOADING end		1,412	
20.	RAM memory error		1,303 (0)	no assignment
21.	Panel restart		1,305	no assignment
22.	Keypad power trouble		1,320 (4)	no assignment
23.	Keypad power restore		3,320 (4)	no assignment
24.	OUT 1 no load		1,320 (1)	
25.	OUT 1 load restore		3,320 (1)	
26.	OUT 2 no load		1,320 (2)	
27.	OUT 2 load restore		3,320 (2)	
28.	OUT 3 no load		1,320 (3)	
29.	OUT 3 load restore		3,320 (3)	
30.	Buffer overflow - station 1		1,624 (1)	no assignment
31.	Buffer overflow - station 2		1,624 (2)	no assignment
32.	DOWNLOAD start		1,410	
33.	EEPROM memory error		1,303 (1)	no assignment
34.	Keypad FIRE alarm		1,115	
35.	Keypad PANIC alarm		1,120	
36.	Keypad AUX alarm		1,100	
37.	Keypad tamper alarm		1,145	
38.	3 wrong codes alarm		1,461	
39.	Time programming	user	1,625	

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## Specifications

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Control panel AC supply voltage .....	AC 230(+10%; -15%)V
Control panel rated AC current supply .....	0.10A
Mainboard AC supply voltage .....	AC 17...24V
DC power supply rated voltage .....	DC 13.6...13.8V
DC power supply total current efficiency .....	1.2A
Battery charging current.....	500mA
Battery cut-off voltage .....	9.5V $\pm$ 0.3V
Mainboard current consumption.....	70mA
Keypad current consumption min./max. ....	35mA / 90mA
Outputs OUT1 to OUT3 current-carrying capacity .....	2.2A
Outputs OUT4 & OUT5 current-carrying capacity .....	50mA
Output +KPD current-carrying capacity.....	1.5A
Housing dimensions.....	225x255x75 mm

### DELIVERY SET INCLUDES:

Mainboard mounting pins .....	4 pcs.
Parametric resistors 2.2k $\Omega$ .....	11 pcs.
Parametric resistors 1.1k $\Omega$ .....	12 pcs.
5-pin male connector.....	2 pcs.
Jumper .....	1 pcs.
DLOAD10 program floppy disk .....	1 pcs.

Table 1. Example of panel power supply load estimation / battery selection.

No.	Loads	Max current	Mean current consumption
1	Main board CA-6	70mA	70mA
2	Keypad + KPD (max. 90mA; 3 pcs. keypads)	270 mA	120mA
3	OUT3 (6 pcs. detectors) *	120mA	80mA
4	Output OUT1.and.OUT2	4.4A**	0.7A
5	Outputs OUT4 and OUT5	2 x 50mA	50mA
6	Battery charging current	500mA	-
Total max current consumption by the system with no alarm signaling		$\Sigma I = 70\text{mA} + 270\text{mA} + 120\text{mA} + 100\text{mA} + 500\text{mA} = 1060\text{mA}$	
Battery selection based on max. and mean current consumption by the system, assumed duration of power failure 12h, assumed 1 alarm with 15 min (0.25h) duration of signaling		$\Sigma A_{\text{Max}} = 1.25 \times (0,07 \times 12 + 0,27 \times 12 + 0,12 \times 12 + 4,4 \times 0,25 + 0,1 \times 0,25) \approx 8,31\text{Ah}$ $\Sigma A_{\text{Av}} = 1.25 \times (0,07 \times 12 + 0,12 \times 12 + 0,08 \times 12 + 4,4 \times 0,25 + 0,1 \times 0,25) \approx 5,46\text{Ah}$ <p>Recommended standby power supply: battery 12V/7.5Ah</p>	

\* Assumed current consumption by a single detector 20mA.

\*\* In case, where the capacity of the power supply is exceeded, the current is supplied by battery.



#### NOTES:

- *It is impermissible to connect a fully discharged battery (voltage on terminals without a load less than 11V) to the alarm panel. To avoid hardware damage, fully discharged or never used battery should be charged initially using proper charger.*
- *The control panel power supply unit has been designed for work with lead batteries or other batteries with a similar charging curve (European Directives 91/157/EEC and 83/86/EEC).*

**IMPORTANT:** The SATEL Company recommends that operation of the whole alarm system be regularly tested. However, a reliable alarm system does not prevent burglary, assault or fire from happening, it only diminishes the risk that such a situation will cause no alarm or notification.



## History of the manual updates

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Given below is a list of the manual updates referring to the program versions 3.04 and 4.00, as compared with the previous version of the control panel software (3.03).

- New transmission formats have been added to service functions FS-45 and FS-46:  

BEFORE: 0D - Radionics with parity 1400Hz, extended	NOW: 0D - <i>do not program</i>
0E - Radionics with parity 2300Hz, extended	0E - Contact ID selected codes
0F - <i>do not program</i>	0F - Contact ID all codes
- The meaning of event no.2 has been changed (from the former "disarming/alarm clearing" to the present "disarming") and new event no.9 "alarm clearing" has been added to functions FS-69 and FS-70.
- Due to changes in functions FS-69 and FS-70, the description of functions FS-73 and FS-74 has been updated – a new programming item "LED 3" has been added to the second set of event assignment.
- Function FS-131 has been extended by option no.4 – "Interaction with DTMF module supported".
- The manual has been supplemented by a list of panel registered events (Appendix C) and code numbers of Contact ID data transmission formats.
- An error in the description of service function FS 133 has been corrected.
- A description of 230V AC supply connection to the housing with no grounding terminal has been added (page 26).

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Updates referring to the control panels with program versions 3.05, 3.06 and 4.01, 4.02.

- The parameter of service function FS-101 (number of rings before answer) has been changed. It was „0 – 7“, now you can program settings from 01 to 15.
  - Functioning of counting zones has been improved. After reset of the counting zone timer an alarm is triggered if the counting zone linked to that timer is still violated.
  - When arming the overlapping partitions no function zones are taken into consideration.
- The way of performance of user functions 7 and 8 has been changed (see description on page 15-16), thus changing the use of access code types 5 and 6 (see notes on page 13). In previous versions, calling one of these functions would simultaneously control all the available zones of a given type.
- A new section has been added to the CA-6 plus Control Panel User Guide for telephone operating of the control panel which works with the MST-1 telephone control module (see page 4 of the said manual).

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Updates of the manuals for control panels with program versions 3.07 and 4.03.

- A description of zone type 41 – Low battery indicator – has been added to the list of zone types (pages 6 and 47).

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List of changes made in the manual in **January 2002**.

- Description of the DLOAD.exe program has been replaced with information on the DLOAD10 program (operating in the WINDOWS environment).
- Description of the FS-112 service function (local communication) has been changed.

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Updates of the manuals for control panels with program version 5.00 and 5.01.

- Information has been added on how to operate the RS-232 (TTL) interface to enable direct programming of the panel from a computer (see pages: 4, 10-11, 21, 30-31, 70).

Changes made in the manual, regarding the control panels with program version **5.02:**

- The way of panel reaction to entering the [CODE][\*] from keypad has been changed. Now the panel always enters the user functions mode and enables the function 7 or 8, irrespective of whether it is armed or not. The other user functions are only accessible when there is no alarm and the system is disarmed (pages 12,13).
  - Disarming is only performed by entering the [CODE][#] from keypad (page 12) – previously also [CODE][\*].
  - Audible distinguishing between output activation and deactivation has been introduced in functions 7 and 8 (pages 15-16, 74).
  - Amendments have been introduced into the notes on page 13.
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List of changes made in the manual in **October 2002** (main board in CA6P V4.1 version):

- The control panel main board has been equipped with a protective circuit with the  $\perp$  grounding terminal (page 20).
  - Installation safety notes have been supplemented (page 20-21, 26).
  - Description of power supply has been changed (page 26).
  - An example of battery capacity estimation has been included (page 78).
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Changes made in the manual, regarding the control panels with program version 5.03:

- A new type of zone reaction added in function FS-26: „19 - perimeter” (p. 5, 43).
  - A second set of options added in FS-131 function (1-2) (p. 68).
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Changes made in the manual, regarding the control panels with program version 5.05:

- Description of LED no. 3 in the second set of option in FS-20 function has been changed (p. 39).

SATEL sp. z o.o.  
ul. Schuberta 79  
80-172 Gdańsk  
POLAND  
Tel. +48 58 320 94 00  
info@satel.pl  
www.satel.pl

# CA-6 plus Alarm System - Wiring Diagram (detailed description of mainboard terminals - see p. 20).

