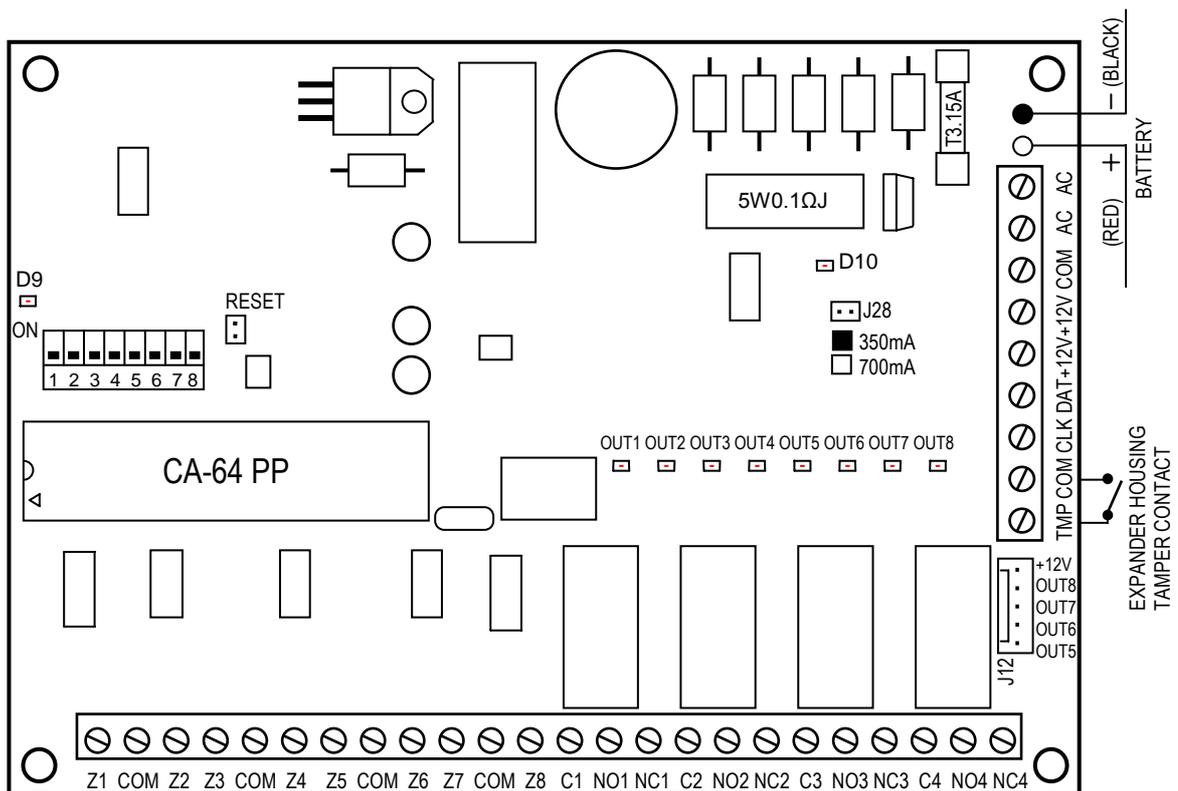


The CA-64 PP expander is a device designed to interface with the INTEGRA and CA-64 alarm control panels. It makes possible extension of the alarm system by eight zones and eight outputs (4 relay outputs and 4 OC type outputs). Features of the zones and functional characteristics of the outputs are identical as those of the main board of the alarm control panel.

NO and NC type detectors can be connected to the expander inputs. The zones can be configured to work as End Of Line (EOL resistor 2.2kΩ) and as Double End Of Line (2EOL - resistors 1.1kΩ). Each of the zones can be individually programmed and assigned one of a few dozen types of response to violation. Furthermore, every zone can be individually programmed with possible selection of one of a few dozen types of output signals.

The module is fitted with a built-in switching-mode power supply unit of 2.2A capacity. It also has battery charging circuit and testing circuit with disconnection of discharged battery.

## MODULE DESCRIPTION



### EXPANDER TERMINALS:

- |                   |   |                 |                               |
|-------------------|---|-----------------|-------------------------------|
| <b>Z1 to Z8</b>   | - zone line                             | <b>CLK, DAT</b> | - expander bus                |
| <b>C1 to C4</b>   | - relay terminal, common                | <b>+12V</b>     | - power supply output         |
| <b>NC1 to NC4</b> | - relay terminal                        | <b>COM</b>      | - common                      |
| <b>NO1 to NO4</b> | - relay terminal                        | <b>AC</b>       | - module supply 17...24V AC   |
| <b>TMP</b>        | - input of expander tamper circuit (NC) | <b>J12</b>      | - jack - outputs OUT5 to OUT8 |

The **AC terminals** serve to connect the secondary winding wires of the mains transformer. The alternating supply voltage can be **17...24V** high. The minimum value of input voltage with the transformer **loaded to the maximum** by the module is **16V** (AC).

The **DIP-switch** situated on the board is intended for setting up the individual expander address.

Ten **light-emitting diodes** (LED) are provided on the board:

**OUT1- OUT8** Eight LEDs situated close to the relays indicate the status of individual expander outputs.

**D9** The LED situated next to the **DIP-switch** indicates the process of communication between the control panel and the expander. During normal work of the module the LED blinks with changing frequency.

**D10** The LED situated close to the pins designated as **J28** is on when the module is testing the battery status as well as when discharged battery is being charged.

During testing, the processor reduces the power supply voltage, and the consumers are supplied from the battery. The testing takes place every 4 minutes and lasts less than 20 seconds.

The **J28 pins** are used to set up the battery charging current:

350mA - pins shorted,  
700mA - pins open.

**Two leads** (red and black) are used to connect the battery.

**The RESET pins** are used in production process and should not be shorted.

**The TMP input** is intended for connecting the expander housing tamper contact, and, if not used, it should be **shorted to the COM terminal**.

The **AC terminals** are used to connect the secondary winding wires of the mains transformer. The alternating supply voltage can have a value of **17...24V**.

Also other electric energy consumers (e.g. detectors, modules with no power supply, sirens) may be connected to the expander power supply unit. However, be careful not to cause an overload. It is advisable to prepare the power supply **load balance**. The total of current inputs for all consumers and battery charging current is not to exceed the capacity of power supply unit.

## OUTPUT TYPES

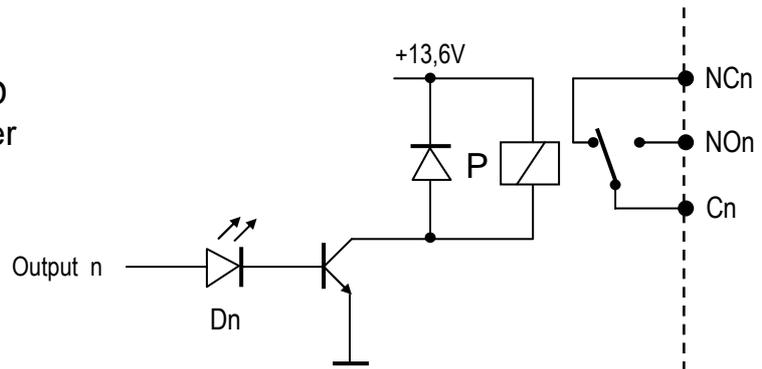
The expander has two types of outputs. The outputs 1-4 are relay outputs while those numbered 5-8 are OC type outputs.

### RELAY OUTPUT

The output controls the status of the relay situated on the expander board. With this type of output the Cn, NO<sub>n</sub> and NC<sub>n</sub> terminals are galvanically isolated from electrical circuits of the expander. When the output status LED is off, the Cn terminal is shorted to the NC<sub>n</sub> terminal, whereas the NO<sub>n</sub> terminal is isolated. Consequently, when the LED is on, the Cn terminal is shorted to the NO<sub>n</sub> terminal, and the NC<sub>n</sub> terminal is isolated.

The output structure is shown in the diagram below. Position of the contacts of the relay presented in the figure refers to the condition when the LED is off.

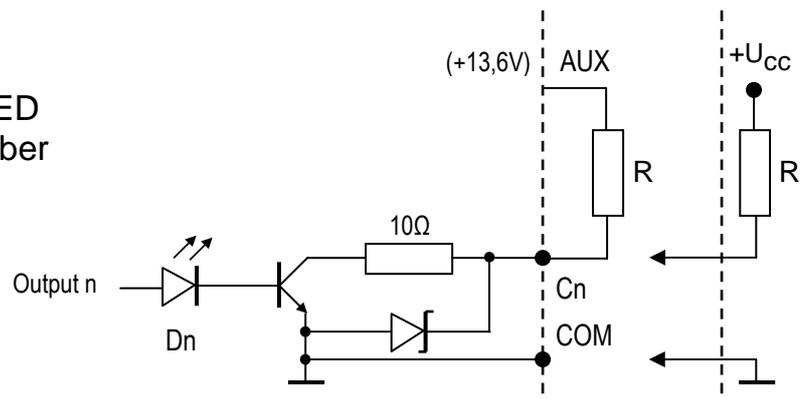
- P - relay winding
- Dn - light-emitting diode LED
- n - expander output number



### OC TYPE OUTPUT (collector open)

The output intended for connecting the voltage controlled equipment (e.g.: sirens with own power supply). Direct connection to a load output (e.g. a relay) is possible provided such a load will not enforce a current flow in excess of 50mA through the output transistor. When the LED indicating the output status is on, the Cn output terminal is shorted to the COM terminal, and when the LED is off, the Cn terminal is isolated. The output structure and the ways of connecting a load are presented in the diagram on the right.

- R - load resistance
- Dn - light-emitting diode LED
- n - expander output number



## INSTALLATION

The CA-64 PP (zones and outputs) expander with power supply may be installed in a control panel housing (with at least 30VA transformer and place for 7Ah battery). Begin installation of the housing with placement of distance pins inside.

## EXPANDER CONNECTION AND POWER SUPPLY ACTIVATION

The expander power supply unit should work being permanently connected to 230V AC mains supply. Therefore, before you commence on the cabling work, make yourself familiar with the electrical system of the site. Choose a circuit that is always live to power the module. The circuit should be protected with a suitable fuse.

**CAUTION !** Before connecting the power supply unit to the circuit, from which it is to be supplied, switch off voltage in that circuit.

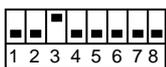
Prior to the commencement of connecting the module to the existing alarm system, turn off power supply of the whole system.

1. Secure the expander board on the distance pins installed in the housing.
2. Connect the bus leads (the first bus: CK1, DT1, COM; the second bus: CK2, DT2, COM - as designated on the control panel main board) to the terminals CLK, DAT and COM. Up to 32 modules of various types can be connected to one bus. For details concerning the cable connections, see the alarm control panel manual.
3. Using the DIP-switch up the expander address.

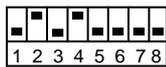
The address is to be set up by means of the switches 1 to 5. Status of the other switches (6, 7, 8) is irrelevant. To determine the expander address, summarize the numbers corresponding to the switches set in position **ON**, according to the table:

Switch number	1	2	3	4	5
<b>Numerical equivalent</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>8</b>	<b>16</b>

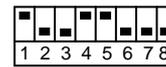
Examples of addressing:



address = 4



address = 2+8=10



address = 1+8+16=25

Five switches allow addresses to be assigned to 32 expanders (Numbers from 0 to 31).

Addresses of expanders connected to one bus may not be repeated, while the sequence of addressing is optional.

4. Connect the leads of the controlled equipment.
5. Connect the leads of the housing tamper contact to the TMP. Where two expanders are installed in the housing, the TMP input of one of them is to be shorted to the COM terminal, and the contact leads are to be connected to the TMP input of the other expander.
6. Connect the consumers power supply leads to terminals +12V and COM on expander board.
7. Connect the 230V alternating voltage leads to the transformer terminals marked "**AC 230V**".
8. Connect the wire of the electric shock protection circuit to the terminal block provided next to the transformer and marked with the ground symbol .
9. Connect the output voltage wires of the transformer winding to the "**AC**" terminals on the control panel main board. **Do not connect two expanders with power supply to one transformer.**

**CAUTION!** As the expander module has no switch enabling disconnection of the mains supply, it is important that you inform the owner or user of the equipment, how to disconnect it from the mains (e.g. by showing him the fuse which protects the expander supply circuit).

10. Using the J28 jumper, set up the battery charging current (350mA or 700mA).

11. Switch on the expander 230VAC power supply. Measure the voltage on battery cables, making sure it has the correct value of approx. 13.7V, and check that all consumers are properly powered.
12. Switch off the module power supply and connect the battery. The module will not become active on connecting the battery alone. The processor enables the module power supply to be switched over to battery operation after about 12 seconds of steady-state voltage at the AC terminals (as from 230V AC mains switching-on).

**NOTE:** *If the battery voltage drops below 11V, the module will signal battery malfunction to the control panel, and when the voltage drops to abt. 9.5V, the battery will be disconnected.*

When all the connections are completed and checked for correctness, you can proceed to activating the expander zones and outputs.

## MODULE ACTIVATION

**NOTE:** *In systems having expansion modules with their own power supply, it is recommended to start the panel first, and then the other components of the system.*

1. Switch on power supply of the alarm system and the expander (the D10 LED will go on and flash with steady light).
2. Call the function "Expander identification" (→Service mode; →Structure; →Hardware) from the keypad. The D10 LED control should start blinking. After completion of the identification, all the **new** zones and outputs are programmed to the factory defaults, the detector type being set to zero (no detector) and the output type also set to zero (not used).
3. Using the DLOADX or DLOAD64 program, set the zones and outputs parameters.
4. End the service mode operation, saving data in the FLASH memory.

**NOTE** *In the process of identification, the control panel is saving in the modules memory a special (16-bit) number, which serves to check the modules presence in the system. Replacement of the expander with another (even one having the same address set up on the switches) without a new identification will trigger an alarm (module tamper - verification error).*

## NUMERATION OF ZONES AND OUTPUTS

The identification function automatically sets up numeration of zones and outputs in the system. Assigned numbers depend on a size of the control panel, which is connected with the module. For example in case of the INTEGRA 64 and CA-64 the numbers 1-16 belong to the main board zones and outputs. Further numbers are assigned to the first bus expanders (from the lowest to the highest expander address), and then to the second bus expanders. Separate numeration is set for zones and outputs, besides, numbers 49-64 may be assigned to LCD keypads. This should be borne in mind when installing new expanders in the system. If the expander address is

lower than the address of an expander previously installed in the system, or where a expander is added to the first bus, and there is already another expander connected to the second bus, the identification function - according to the principle described above - will shift the numeration of zones or outputs between the expanders. The expander will take over the zone / output numbers of the previously installed expander, which, in turn, will be given the numbers of new zones /outputs added to the system. If this is the case, the previously assigned expander zones /outputs can be restored by means of the DLOADX or DLOAD64 program. To do so, call the function "Advanced settings" (→Structure; →Hardware; →Expander settings).

## TECHNICAL DATA

Number of zones .....	8
Number of outputs .....	8
Expander supply voltage .....	17V...24V AC
Internal power supply output voltage, rated.....	13.6V...13.8V DC
Power supply current efficiency .....	2.2A
Battery charging current (switch-over).....	350mA or 700mA
Current consumption (with no load of OC type outputs or active relays).....	34mA
Current consumption by active relay .....	20mA
OC type output current-carrying capacity .....	50mA
Maximum voltage switched over by relay .....	24V
Maximum current switched over by relay .....	2A
Dimensions .....	101x142 mm

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