



# OUTPUTS EXPANDER

## CA-64 O- OC/R/ROC

ca64o\_e 09/06

The CA-64 O-OC (R; ROC) expander is a device designed to interface with the INTEGRA and CA-64 alarm control panels. It permits of expansion of the alarm system by eight outputs having the same functional features as the main board outputs. The module has no power supply of its own. The expander comes in three versions that differ from each other by the type of their outputs:

CA-64 O-OC expander with 8 OC type outputs,

CA-64 O-R expander with 8 relay type outputs,

CA-64 O-ROC expander with 4 OC type outputs and 4 relay outputs.

Each of the outputs is individually programmed and can be assigned one of a few dozen types of the output signal.

### MODULE DESCRIPTION

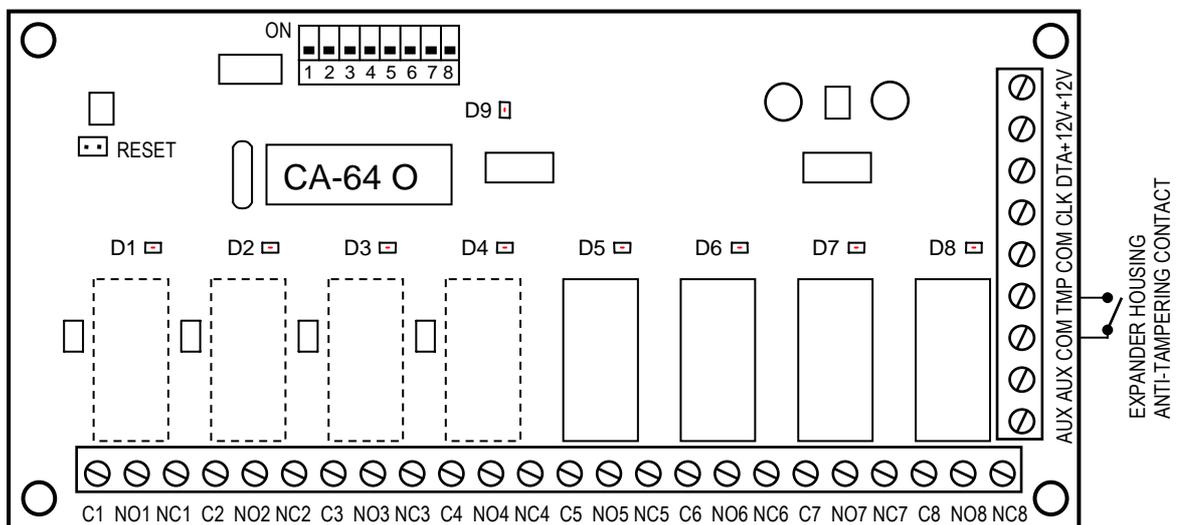


Fig. 1. View of expander board in „ROC” version (4 OC type outputs plus 4 relay outputs).

#### EXPANDER TERMINALS:

- C1 to C8** - OC type output or relay common terminals
- NC1 to NC8** - relay terminals
- NO1 to NO8** - relay terminals
- AUX** - supply voltage output
- COM** - ground
- TMP** - expander anti-tampering circuit input (NC)
- CLK, DTA** - expander bus
- +12V** - supply voltage input / output

The **set of switches** situated on the board serves to set up the individual expander address. Up to 32 modules of various types can be hooked up to one bus.

**9 light-emitting diodes** (LEDs) are provided on the board:

**D1-D8** Eight LEDs situated next to the relays (or the places for relays), indicating the status of individual expander outputs.

**D9** The LED situated near the address switches indicates the communication process between the control panel and the expander. During normal operation of the module, the LED is blinking with a changing frequency.

Two **RESET pins** are used in the production process and are not to be shorted.

The **TMP** input is intended for connecting the anti-tampering contact of the expander housing and, if not used, it should be **shorted to ground**.

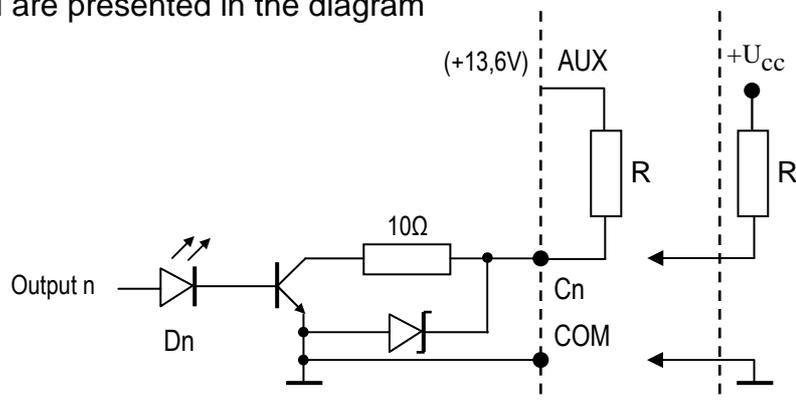
## OUTPUT TYPES

The terminals C1 to C8 serve various purposes, depending on the type of output.

### OC TYPE OUTPUT (collector open)

The output intended for connecting the voltage controlled equipment (e.g.: radio messaging, alarms with own power supply). Direct connection of a load (e.g. a relay) to the output is possible provided such a load will not force 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 ground, 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.

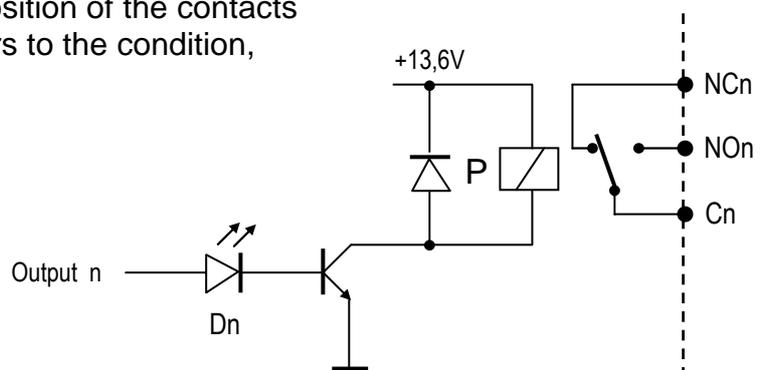
- R - load resistance
- Dn - LED indicator
- n - expander output number



### 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 on the right. Position of the contacts of the relay presented in the figure refers to the condition, when the LED is off.

- P - relay winding
- Dn - LED indicator
- n - expander output number



## INSTALLATION

The outputs modules may be mounted in the CA-64 OBU-EXA housing, in which any two expanders without power supply can be installed. Installation should begin with placement of distance pins inside the housing.

## EXPANDER CONNECTION AND POWER SUPPLY ACTIVATION

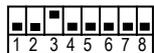
**NOTE:** Prior to commencement of the module hookup, turn off power supply of the alarm system.

1. Secure the expander board on the distance pins in the housing and connect the bus leads (the first bus: CK1, DT1, COM or the second bus: CK2, DT2, COM - as designated on the control panel main board) to the terminals CLK, DTA and COM.
2. Connect the leads of controlled devices and the power supply. The expander supply voltage need not be derived from the control panel main board. A buffer power supply or another expander with power supply may be used for this purpose. The details of cable connections are presented in the alarm panel manual.
3. Connect the leads of the anti-tampering contact in the expander housing. Where two expanders are installed in the housing, the TMP input of one of them is to be shorted to ground and the contact leads are to be connected to the TMP input of the other one.
4. Using the switches, set up the expander address and energize the alarm system (the D9 LED will shine with steady light).

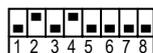
The address is to be set up by means of the switches 1 to 5. Status of the other switches (6, 7, 8) is irrelevant. To determine the expander address, add the numbers corresponding to the switches set in position **ON**, according to the table:

Switch number	1	2	3	4	5
Numerical equivalent	1	2	4	8	16

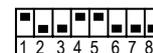
Examples of addressing:



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.

5. Call the function „*Expander Identification*” (→Service mode; →Structure; →Hardware) from the keypad. The D9 LED should start blinking. When the identification is completed, all the **new** inputs will have been programmed to factory defaults, the output type being set to zero (not used).
6. Using the DLOADX or DLOAD64 program, set the output parameters.
7. End the service mode operation, saving data in the FLASH memory.

**NOTE:** In the process of identification, the control panel is saving in the expander memory a special (16-bit) number, which serves to check the module 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 OUTPUTS

The identification function automatically sets up numeration of 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 outputs. Further numbers are assigned to the first bus expander outputs (from the lowest to the highest address of the outputs expander), and then to the second bus outputs expanders. This should be borne in mind when installing new expanders in the

system. If the new expander address is lower than that of an expander previously installed in the system, or where an 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 outputs between the expanders (the new expander will take over the output numbers of the previously installed expander, which, in turn, will be given the numbers of new outputs added to the system). If this is the case, the previously assigned numbers of expander 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 outputs .....	8
Nominal supply voltage .....	12V DC ±15%
Current consumption (with no load of OC type outputs or active relays) .....	36mA
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 .....	68x140 mm

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