

**SPECIFICATION AND USER'S MANUAL**

type of the device: radio reporting with the link control, type: RP 10

**TECHNICAL PARAMETERS OF THE RP RECEIVER**

- frequency: 433,92 MHz
- radio transmission: KeeLoq hopping code by Microchip Technology
- link control: yes
- type of the receiving module: superheterodyne
- sensitivity: -115 dBm
- number of objects: max 10 (basic version: 2 objects)
- supply:
  - nominal: 12 V DC
  - allowable: 10-15 V DC
- maximal power consumption:
  - with 1 module: 0,3A
  - with 5 modules: 1,3A
- capacity:
  - relay output: 1A/24V DC; 0,5A/125V AC
  - sabotage output: 50mA/ 12 V DC
- security level: IP 67
- temperature operating range: -20 to +40 °C
- antenna socket: BNC 50 Ohm
- dimensions: 180 (220)\*130\*80
- cooperation: sender, types 102K and 102B
- operating range(m)\*: 2000

**TECHNICAL PARAMETERS OF THE SENDERS**

type: 102K, 102B type  
frequency: 433,02 MHz  
radio transmission: hopping code by Microchip Technology  
link control: yes  
number of channels: 4 (2 inputs controlled independently)  
supply:

- nominal: 12 V DC, 9V (6x LR6-AA battery)
- allowable: 10-15 V DC

power consumption:

- static: 2,5 mA
- maximal: 12 mA

maximal capacity of the sabotage output: 50mA/12 VDC  
range (m)\*: 2000  
temperature operating range: -20 to +40 °C  
security level: IP 67  
antenna socket : BNC 500hm  
dimensions (mm): 76(110)\*61\*33, 130(160)\*130\*37



**The operating range** - the given range concerns the open space (without any obstacles, when the receiver and the remote control can see each other"). If there are any obstacles between the receiver and the sender, one must assume that the range would be reduced: for wood and plaster it would be 5-20% lower, for bricks 20-40% lower, and for reinforced concrete 40-80% lower. If there are many obstacles we recommend using retransmitters. If there are metal obstacles, using the radio systems is not recommended. You should consider installing the WLC 201 module which helps to avoid this problem.

**The device meets the requirements of the directives EMC 89/ 336/ EEC and RTTE 1999/ 5/ EC.**



**The receiver installation conditions** - good. Firstly, the hermetic case allows for installing RP 10 in difficult conditions such as humidity or low temperatures. It can work outside. Secondly, the superheterodyne receiving module is characterized by high resistance to electromagnetic interferences. In practice it means that the operating range is extended and the influence of interferences on the receiver's work is minimized.

**The transmission code** - the radio transmission, based on the hopping code (KeeLoq by Microchip Technology Inc. USA) ensures the high safety of using. Each transmission is different from the previous one. To make the receiver work, you must enter a remote control into its memory – it is the basic condition. The sender can be programmed to the unlimited number of receivers.

The link control parameter guarantees being informed about the possible changes on the radio transmission way (unexpected obstacles, radio and mechanical sabotage etc.).

**Use** - sending alarm signals from secure objects on large distances.

**Frequency 433,92 MHz** – the devices work on the frequency 433,92 MHz. This bandwidth does not require any special permissions and concessions for using it.

The device can cooperate with two types of senders: NRP 102K and NRP 102B.

## 1. DESCRIPTION

The device can operate in two modes: control panel mode and independent mode.

The control panel mode is designed for situations when the alarm signals from distant objects are supposed to be transmitted to the alarm control panel. The radio reporting serves as a link between the objects and the alarm control panel.

The relays in the RP10-2K receiver mirror the state of inputs of the senders. When the alarm state appears on any of the objects, the appropriate relay starts working and after the alarm state disappears, the relay is closed.

The independent mode allows for supervising the alarm states in the distant objects. Both of the channels in each of the senders may have either „informative“ or „alarm“ status. When an alarm state occurs on any of the controlled objects, the appropriate relay in the receiver is activated and this state is signalled until manual deletion.

## 2. ANTENNA INSTALLATION

The radio-reporting receiver may cooperate either with a superheterodyne receiving module, installed directly in the receiver's case or with a WLC-201 outer amplifier. Using WLC-201 enables you to install the antenna in a place of good conditions of radio signals reception (for example, on a mast), 200m from the radio reporting receiver. WLC and the RP10-2K receiver are connected with each other with a standard wire used in alarm installations.

You can change the signal's source with the switch in the processor's module.

## 3. OPERATING IN THE CONTROL PANEL MODE

Each of the senders sends signals informing about the link control, the supply control and the alarm states on the two inputs.

### 3.1. K1 and K2 alarm inputs

The K1 and K2 inputs work independently, according to the following rules:

- shorting the K1 input in the sender responds to closing the K1 relay in the receiver, that is the K1 contacts leading to the terminal strip are shorted
- unshorting the K1 input activates the K1 relay and unshorts the K1 contacts
- relay's operation is signalled by the lightning LED diode
- each change of the input state immediately sends information about the device's present state
- transmission is sent twice in several-second interval
- the K2 input operates identically with the K1 input

### 3.2. Link control

Test signals are sent from each sender maximally in every 10 minutes. If the receiver does not receive any signal from a given sender for 30 minutes, it will be signalled as a lack of link - the LINK CONTROL relay will get activated and the contacts leading to the terminal strip will get unshorted.

After the receiver gets the test or the alarm signal (from a sender programmed to the given link) the LINK CONTROL relay will be closed and the contacts will get shorted.

### 3.3. SUPPLY CONTROL

The voltage supplying the sender is controlled and its lowering under the critical value makes the contacts in the receiver unshorted for the appropriate relay and the LED diode lightning. The critical value of voltage for a battery sender is 6,7V and for a sender with an outer supply 11V.

From the moment the critical state occurs, the battery sender keeps its standard parameters (for example, range) for the period which varies from several days up to several weeks, depending on the type of batteries and number of the sent alarm signals.

If the supplying voltage is restored to the level above the critical value, the relay will be closed (the contacts will get shorted) and the LED diode will fade.

## 4. OPERATING IN THE INDEPENDENT MODE

### 4.1 K1 and K2 inputs

The K1 and K2 inputs operate independently, according to the following rules:

- shorting the K1 input in the sender responds to closing the K1 relay in the receiver, that is the K1 contacts leading to the terminal strip are shorted
- unshorting the K1 input activates the K1 relay and unshorts the K1 contacts. However, the next shorting of the K1 input of the sender causes reaction in the receiver only if the mask for this channel is not set in the receiver. If the given channels is "masked", the next input shorting in the appropriate sender will not close the appropriate output's relay in the receiver. This relay can be opened only with the RESET button adjoined to the clamp on the mainboard or with the K7 button in the processor's module
- the K2 input operating is analogical to the K1 input

### 4.2 Link control

Just as in the control panel mode, test signals are sent from each sender maximally every 10 minutes. If the receiver does not get any signal from a given sender for 30 minutes, it will be signalled as a lack of link - the LINK CONTROL relay will get activated and the contacts leading to the terminal strip will get unshorted.

After the receiver gets the test or the alarm signal (from a sender programmed to the given link), on the contrary to the control panel mode, the LINK CONTROL relay will be NOT closed and the contacts will NOT get shorted.

You can do it only by using the RESET button (which is adjoined to the clamps on the mainboard) or with the K7 key in the processor's module.

### 4.3 Supply control

On the contrary to the control panel mode, restoring the voltage supply do the level above the critical value will NOT close the relay (shorting the contacts) and the LED diode will NOT fade.

## 5. RECEIVER'S CONSTRUCTION

The receiver is characterized by the module construction. It means that the device can be configured depending on the needs. Three basic modules can be distinguished:

- the main board – the rest of the modules are installed on it. It has 6 sockets: 5 for the relay modules and 1 for the processor module. The processor module is installed in the socket just by the terminal strip and the relay modules – in succession in the next sockets (Note: you must not leave a free socket between the processor module and the last installed relay module). The terminal strip located on the mainboard has the clamps of the voltage supply (10-15V DC), the clamps which allow for connecting an outer button RESETTING alarm signals, the sabotage clamps and clamps for the amplifier of the WLC 201 type, which was mentioned before. Beside the processor module there is a J1 switch which allows for turning the LED signalling off on the relay modules. Optionally, on the mainboard the module of the superheterodyne receiver is located;
- the processor module – the printed circuit with a processor which controls the work of the whole system with a keyboard which allows for programming the receiver. The module contains also two switches which allow for choosing the signal's source: outer amplifier of the WLC type or a superheterodyne receiver and a switch which allows for turning the acoustic signalling device off.
- relay module – an executive module which allows for adding outer devices as an alarm control panel. Each module can work with two independent senders (NRP 102K or NRP 102B). The module has 8 relays (4 relays for each object). Two contacts on the terminal strip respond to each relay. The contacts can be of the NC or NO type. The choice is done by the SMD resistors that is why it is not recommended to configure the system individually. On default, the contacts are set on the NC position. The relay's activation is signalled by the lighting diode (under the condition that the switch on the mainboard was not unshorted earlier – it would turn all the LED diodes from the relay modules off).

Minimal mounting of the mainboard:

- processor module
- 1 relay module

## 6. PROGRAMMING THE RECEIVER

You can enter the programming mode by pressing the K6 button – the D1 diode will light. By pressing the K4 button you will light in succession the diodes: D2, D3, D4, D5 and again D1, D2, etc.

The D1-D5 diodes correspond to the following functions in the programming menu:

- D1 – exit the programming mode
- D2 – learn a new sender
- D3 – set masks
- D4 – set the maximal number of the patrolled objects
- D5 – choose the receiver's operating mode

To confirm the chosen MENU function, press the K1 button. For example, pressing the K1 button when the D1 diode lights will quit the programming mode.

The D2 diode's lighting – learn a new sender. Choose this option with the K1 button. It will light the diode of the low battery level in the object no.1. If you press in this moment the K4 button, it will make the diode in object 1 fade but the same diode will light in the object no.2. Next pressing the K4 button will light the diode for the object no.3, etc. Now, you have to activate twice the programmed sender (NRP 102K or NRP 102B) by pressing the test button or changing the inputs' state. When the signal from the sender achieves its aim, it will be signalled – the LED diodes for the given object will light (in the relay module) and then all of them will fade. Then choose the next option in the programming menu with the K4 button (the signalling of the diodes D1-D5 on the mainboard was discussed earlier).

The D3 diode's lighting – the masks setting has significance when the device operates in the independent mode. If you set a mask for a given channel in a given object it will mean that activating alarm in this object will activate the relay and closing the relay may happen ONLY by pressing the K7 button in the processor module or the button adjoined to the RESET clamps on the mainboard.

(NOTE: when the channel is masked and the inputs come back to the "normal" state, it does not cause closing the relay). You can choose the mask programming by pressing the K1 button while the D3 diode lights. The diode of the low battery level in the first object will light. It means that you can change the masks settings in that moment exactly for this object. You can move between the objects by pressing the K4 button. You can change the mask for a given object by pressing the K3 button. Pressing this button will light in succession the diode for channel 1, for channel 2 and for both channels. The lighting diode means setting mask to a given channel (you can delete alarm for this channel only with the RESET button or the K7 button). Confirm the settings with the K2 button. Then choose the next option in the programming menu with the K4 button (the diodes D1-D5 signalling on the mainboard was discussed earlier).

The D4 diode's lighting – setting the maximal number of the patrolled objects. The number of objects should correspond with the number of the programmed senders. This function allows also for ignoring alarms from the earlier programmed senders (NOTE: for example, if you set the number of objects on 5, it will cause ignoring the signals from the senders programmed for the objects 6-10). You can choose this menu option by pressing the K1 button when the diode D4 in the processor module is lighting. It will light the diode of the low battery level in the object 1. Next pressing the K4 button will light the same diode in the next objects. For example, if the diode lights in the object 8, it will mean that 8 object were assigned – that is, the signals coming from the objects 9 and 10 will be ignored. Confirm the setting with the K2 button.

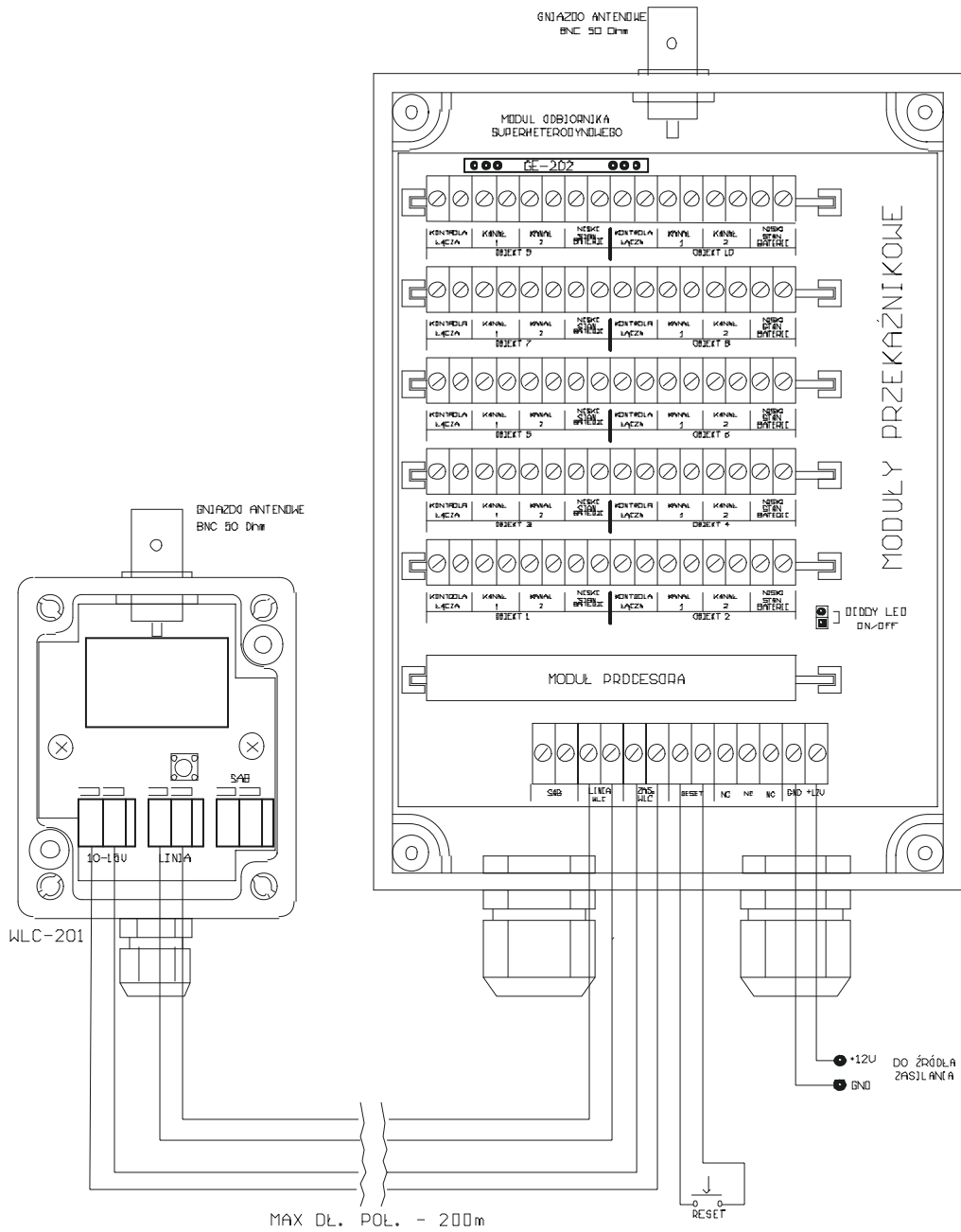
Then choose the next option in the programming menu with the K4 button (the diodes D1-D5 signalling on the mainboard was discussed earlier).

The D5 diode's lighting – choosing the operating mode. As it was mentioned earlier, the receiver may operate in two modes: the independent mode and the control panel mode. Choose this option with the K1 button while the D5 diode is lighting in the processor module. You can choose the operating mode with the K4 button – the subsequent pressing the button will make the diode in the object 1 light and fade. The diode's lighting corresponds with the control panel mode and the faded diode – with the independent mode.

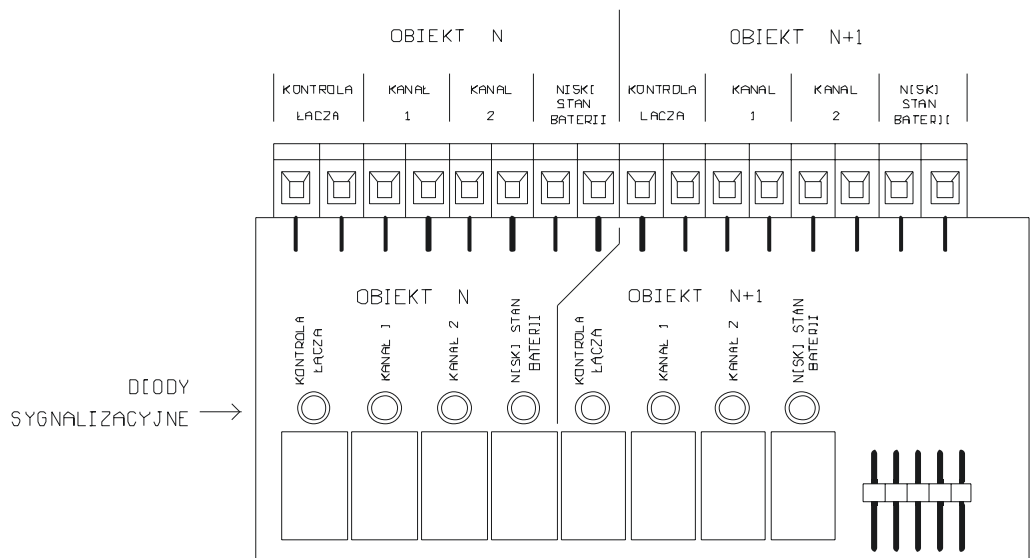
Confirm with the K2 button.

Then choose the next option in the programming menu with the K4 button (the diodes D1-D5 signalling on the mainboard was discussed earlier).

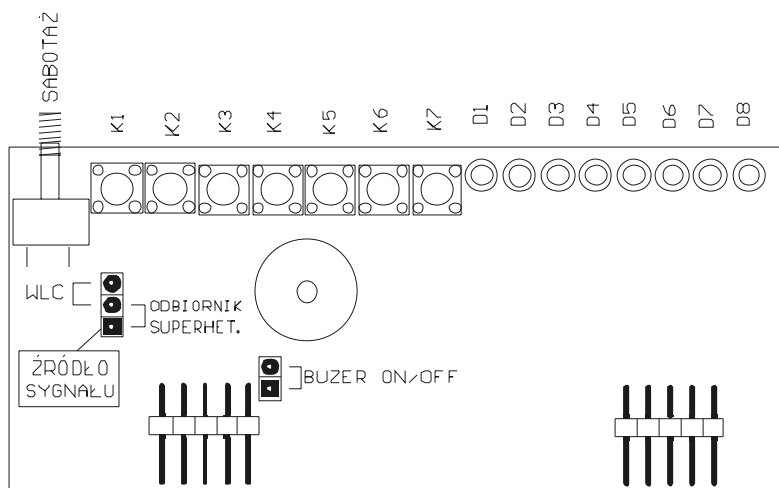
# WAY OF CONNECTING THE RP-10-2K WITH THE WLC 201 MODULE

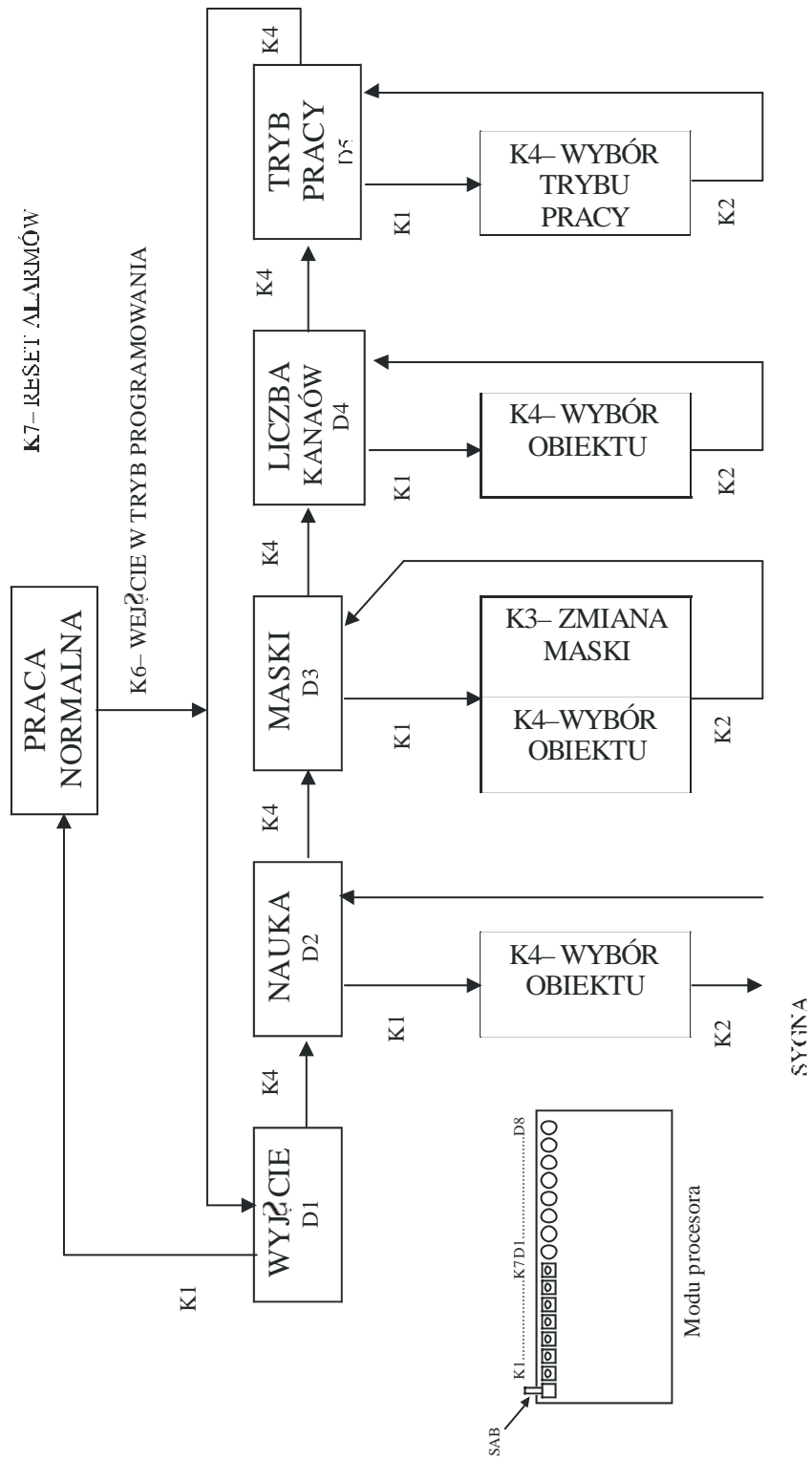


## RELAY MODULE

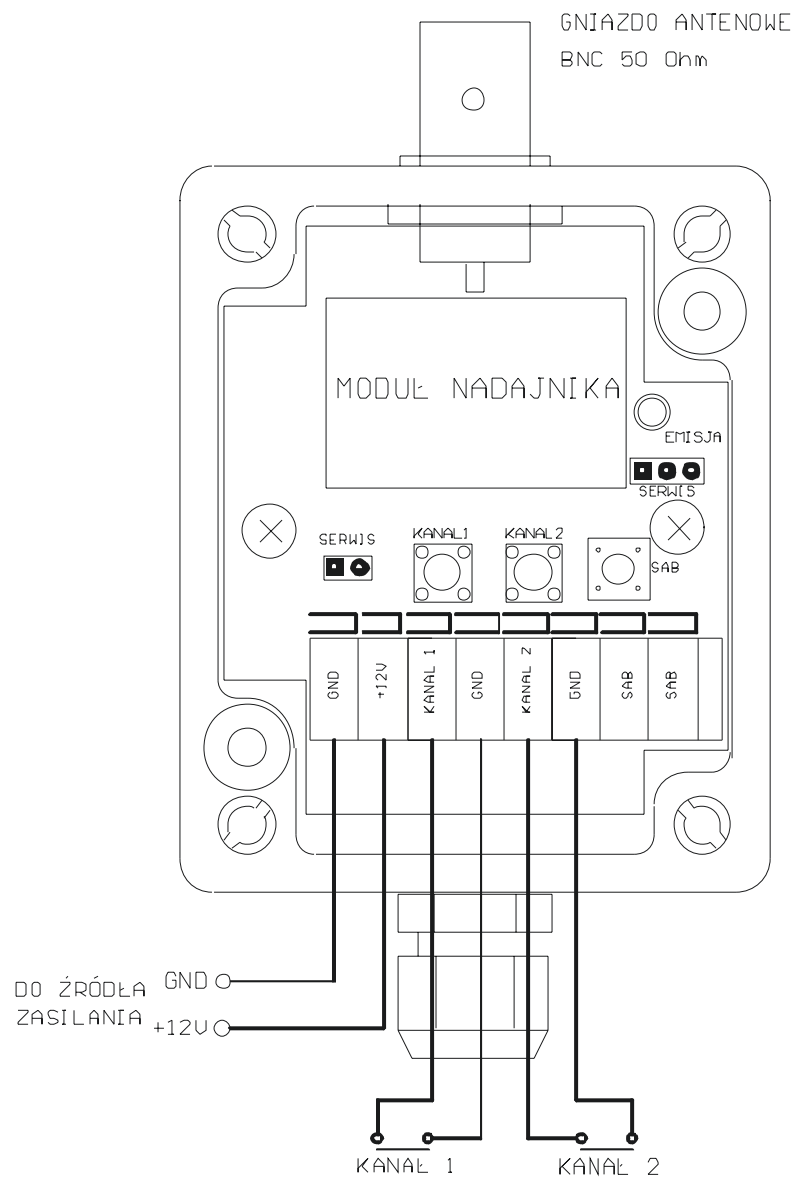


## PROCESSOR MODULE





**SPOSÓB PODŁĄCZENIA NADAJNIKA typ NRP 102K**



### SPSOSÓB PODŁĄCZEŃ NADAJNIKA typ 102B



