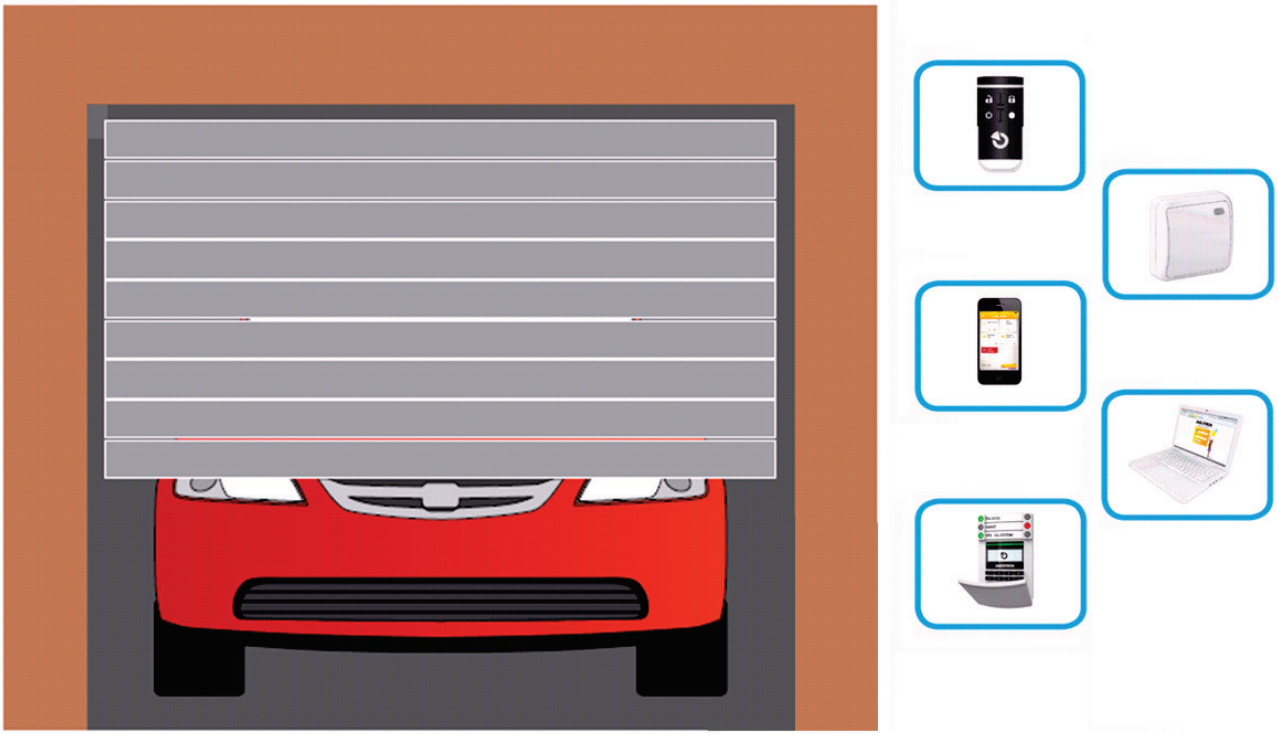
I. Controlling a Garage door control with an original garage control unit by system JABLOTRON 100

The garage gate equipped with an electric motor and single-input control unit (control logic: open-stop-close-stop) can be conveniently operated by JABLOTRON 100 security system either locally (keypad with an indication segment, remote controller) or remotely (MyJABLOTRON smartphone application).



1. Description:

Using a JA-100 security system a garage gate can be controlled via programmable (PG) output by remote controllers or by a keypad segment. According to the local installation requirements this can be realized as a wireless or BUS solution using an appropriate output module connected to the garage door's original control unit. Using a magnetic contact placed on the garage door, the keypad can also indicate an open garage door on one of its segments. Using a smartphone or a web application the current status of the garage door can be checked and also controlled remotely. Other option of the remote control is by dialling in from an authorized phone number, or alternatively by sending a pre-defined SMS command to the JA-100 control panel.

Study case no. 17001

Content

2. Components:

- The JA-154J MS remote controller is an appropriate model for the simultaneous control of the security system and the PG output. It optically and acoustically indicates command performance.
- A system keypad equipped with one segment can also be used for the control and status indication of the garage door. There has to be an appropriate detector installed to indicate an open garage door. Recommended types are: The JA-150M wireless model or the JA-111M BUS model.
- In accordance to local requirements choose an appropriate PG output module, see the figure below:

<table>
<tr><th rowspan="10">PG modules</th><th>Type of connection</th><th>Purpose</th><th>Housing</th><th>Type of module</th><th>power</th></tr>
<tr><td rowspan="4">Wireless</td><td rowspan="3">Power</td><td>DIN</td><td>AC-160 DIN</td><td rowspan="3">230V AC</td></tr>
<tr><td>KU-68</td><td>AC-160 C</td></tr>
<tr><td rowspan="2">PCB</td><td>JA-150N</td></tr>
<tr><td>Signal</td><td>JA-151N</td><td>12V DC</td></tr>
<tr><td rowspan="5">BUS</td><td rowspan="2">Power</td><td>DIN</td><td>JA-110N DIN</td><td rowspan="5">BUS</td></tr>
<tr><td rowspan="4">PCB</td><td>JA-110N</td></tr>
<tr><td rowspan="3">Signal</td><td>JA-111N</td></tr>
<tr><td>JA-114HN</td></tr>
<tr><td>JA-118N</td></tr>
</table>

- If remote controllers or wireless PG output modules are used the JA-111R radio module has to be installed.

Typical wireless devices:

- JA-154J MS remote controller (JA-164J alternatively)
- JA-154E keypad (or JA-153E) with a JA-192E control segment
- JA-150N output module + JA-190PL installation box (AC-160DIN or AC-160C alternatively)
- JA-150M magnetic detector (or JA-151M mini model)

3. Connection:

This Case study is based on the condition you have read the manuals of used components and it requires their active use. On the following pages a basic BUS and wireless solution is described. Other options can be found in the chapter “Advanced options”.

Procedure:

1. Install the selected PG module to the drive of a garage door or a gate and using the DIP switches pre-set the module to react to the correct PG output (in the following example we use PG1). For interconnection with the drive unit, the C and NO terminals are usually used.
2. Connect proper power supply to the wireless module (12 V DC or 230 V AC) or connect a BUS cable to the BUS module.

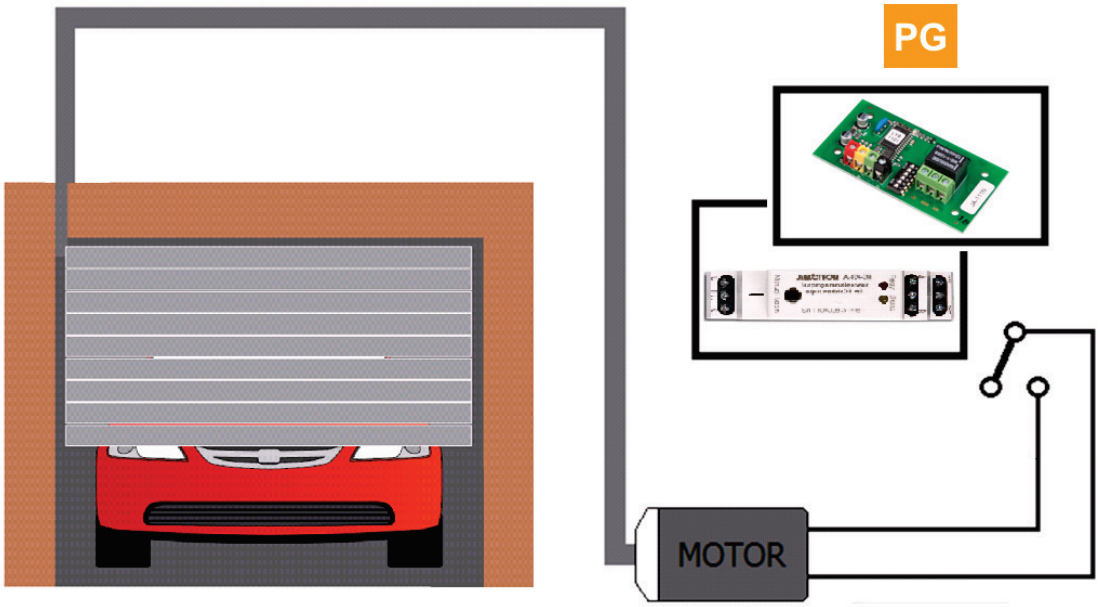


Figure no. 1 – principal schematic

4. Setting the properties and programming:

1. On the PG outputs tab set the properties of the two PG outputs. This first one (PG1) will control the garage door control unit using the already installed module and the second will serve for the indication of an open garage door on the system keypad segment.

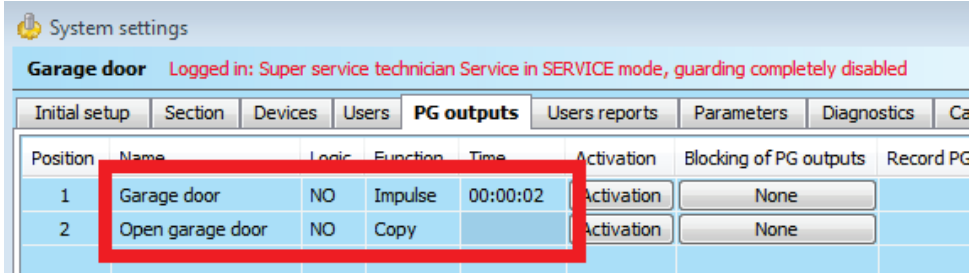


Figure no. 2 – PG output activation settings

2. In the following step set the JA-154J /JA-164J remote controller properties. Select the function “Change PG state” for “PG1 Garage door” to the button which is meant for garage door control.

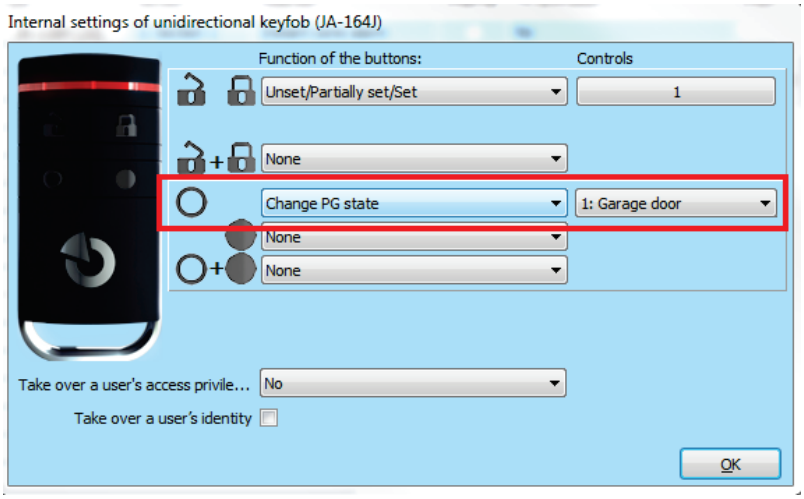


Figure no. 3 – The JA-164J keyfob properties

Using the following remote controller(s) (JA-182J, JA-186J, JA-188J etc.) pre-set its reaction to „None“ and into the **PG activation** column put PG1: Garage door to control garage door:

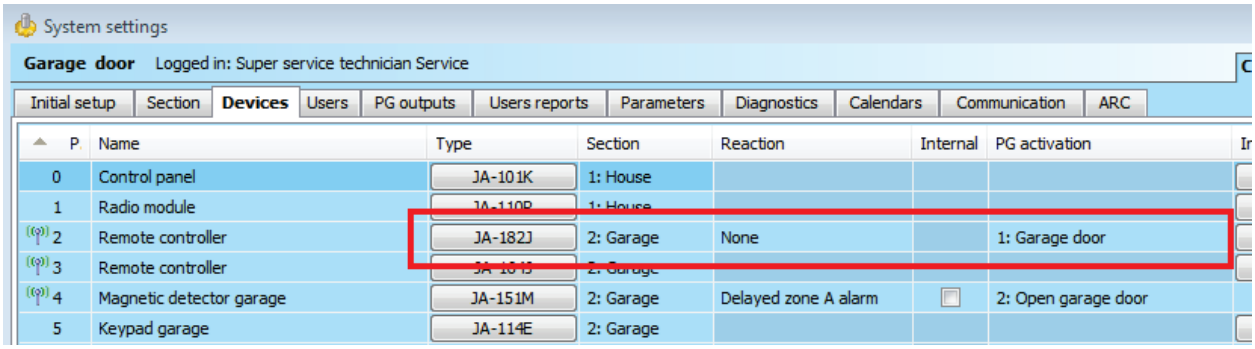


Figure no. 4 – The JA-182J keyfob properties

3. If there is a magnetic detector installed on the garage door then into the **PG activation** column put PG2: Open garage door. The garage door status then can be indicated on the keypad segment:

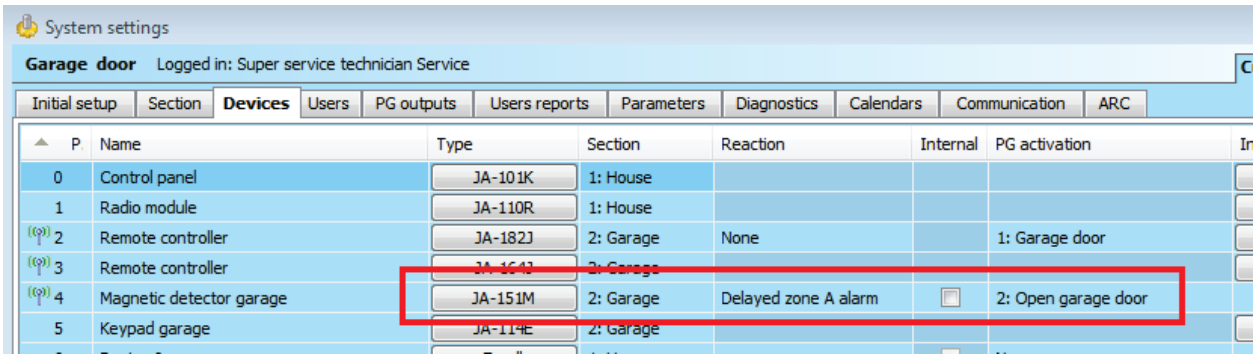


Figure no. 5 – Setting the PG output control by magnetic detector

4. Garage door control via the keypad segment can be set in two ways:

– The first way uses above described magnetic detector. This variant is based on the segment function „PG indicates/control“, which shows the current status (open / closed) of PG2: Open garage door and when the segment button is pressed it controls PG1: Garage door output.

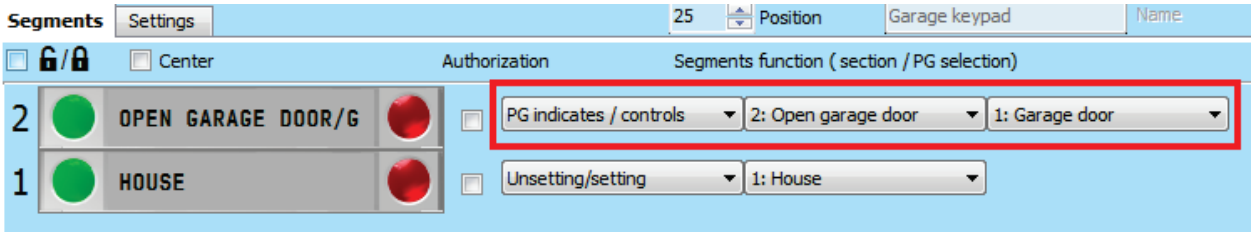


Figure no. 6 – Keypad segment settings (variant with magnetic detector)

– Second variant is installation without magnetic detector. The segment only serves to control the garage door without option to indicate the status of the garage door on the keypad.

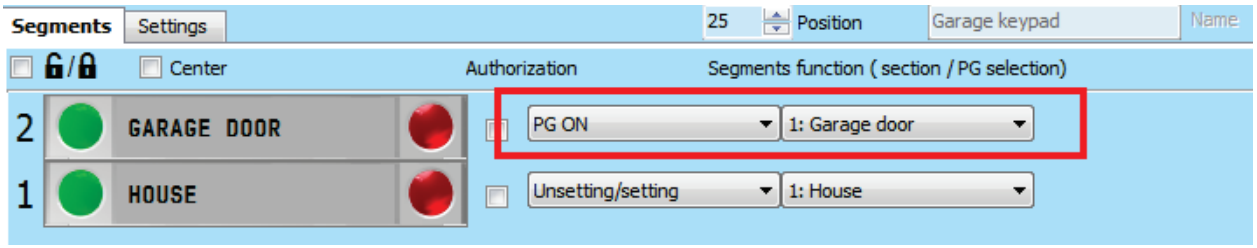


Figure no. 7 – Keypad segment settings (variant with a magnetic detector)

5. The next option to control the garage door is an SMS message or by dialling in from an authorized telephone number (stored in the control panel) only:

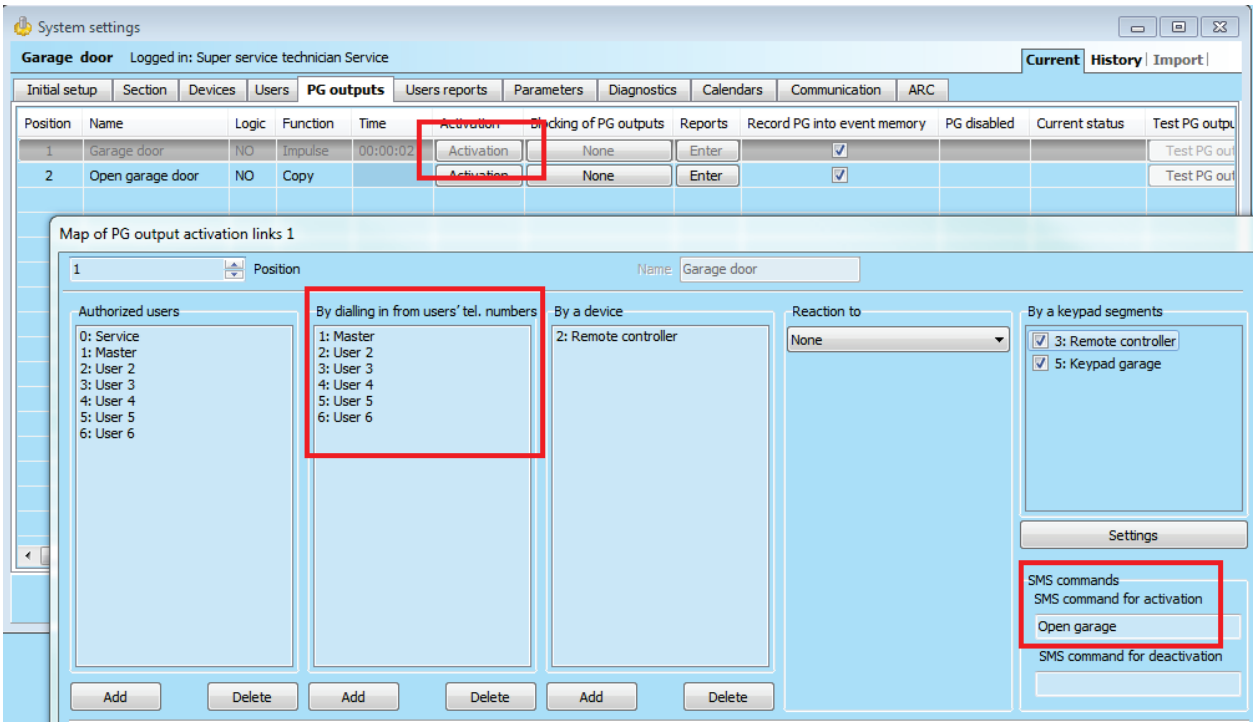


Figure no. 8 – Setting the properties and options of programmable output PG1

5. Local and remote control:

The garage door can be controlled locally (inside the premises):

- By the control segment of the keypad which simultaneously indicates the current status of the garage door
- By a remote controller with an RF range covering the radio module environment or repeater
- By a wireless button near the garage

And remotely (out of the premises):

- From the web or smartphone application MyJABLOTRON; clicking on a virtual segment or activation by the required PG output (the same as with a physical keypad located in the premises). The status can also only be monitored via the application.
- By a pre-defined SMS command from an authorized telephone number
- By dialling in from an authorized telephone number

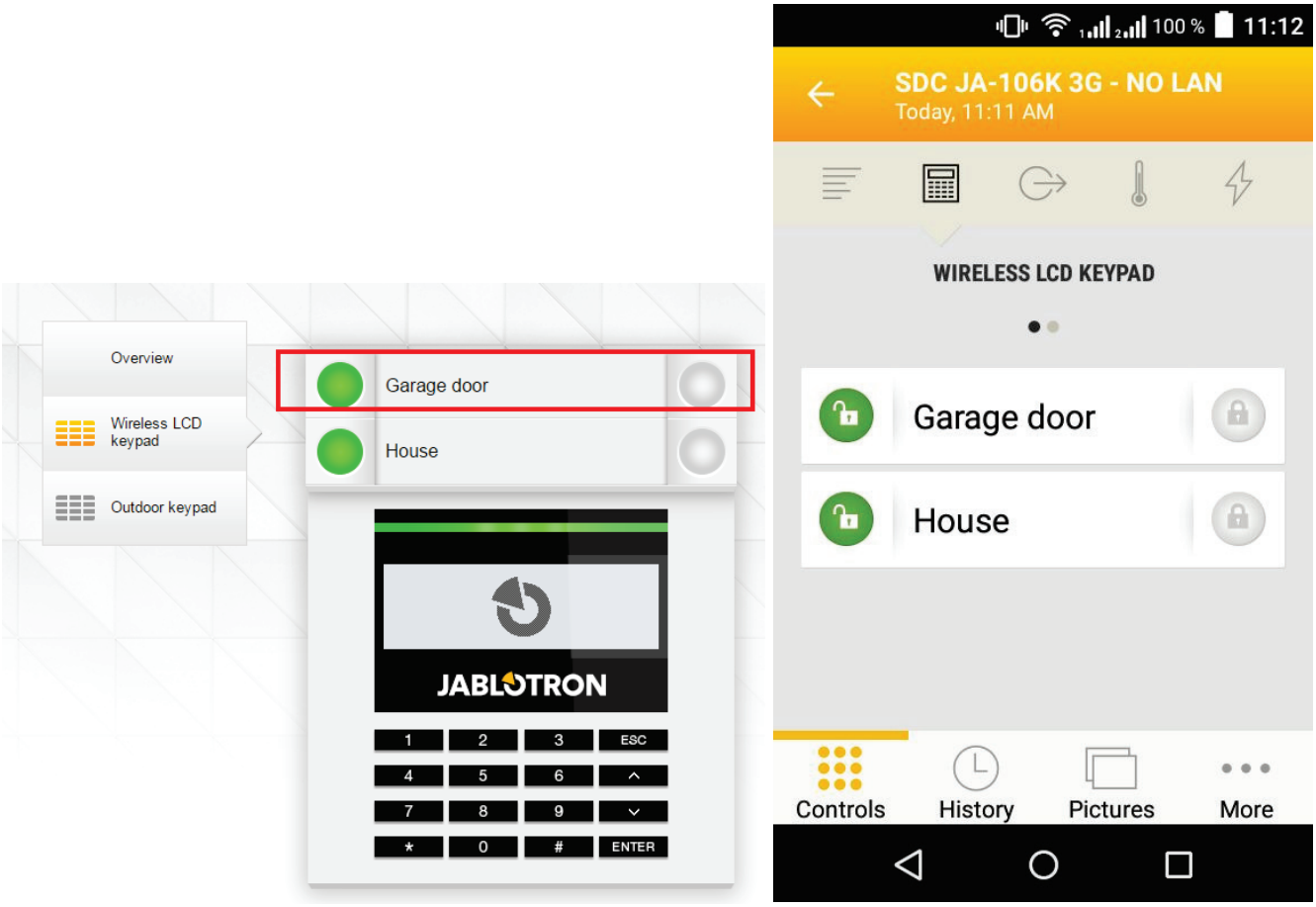


Figure no. 9 – Control by virtual keypad from the web and Figure no. 10 – MyJABLOTRON smart application

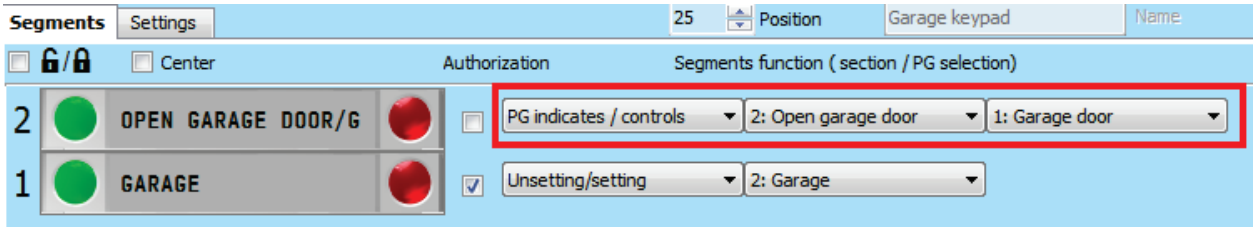
II. Garage door control – advanced options

List of advanced options examples

1. Automatic closing of the garage door after a pre-set time
2. Acoustic indication to opening a garage door for a long period
3. Automatically switching the lights on when the garage door opens
4. Acoustic indication of the garage door remaining open when closing it
5. Automatic garage door control by Garage section
6. Automatic setting by calendar with auto garage door closing
7. Blocking garage door control by a calendar

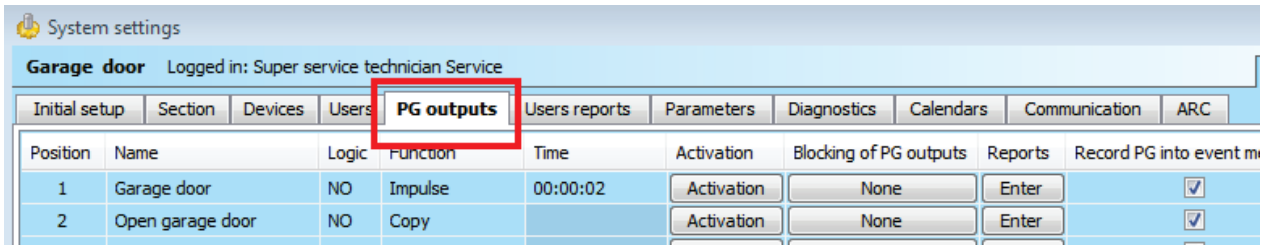
All the above mentioned automation options use a combination of a JA-100 security system and expects a connection to the garage door drive control unit. The unit should be able to be controlled by one input terminal (cyclically: open / stop / close / stop) and simultaneously the connection of safety IR beam meant to effect the interruption of unit drive activity when any obstacle is detected (car, child or bicycle) in the garage door area during closing to avoid any injury or property damage. The next critical requirement is using a magnetic detector meant for security reasons but also for the automation function of the garage door.

In all the variants the system keypad is used with at least 2 control segments, the first one is meant for the control of guarding the “Garage” section. The second segment indicates the garage door status using the PG output controlled by a magnetic detector installed on it. The same segment also simultaneously serves to control another PG output which then operates the garage door drive unit.



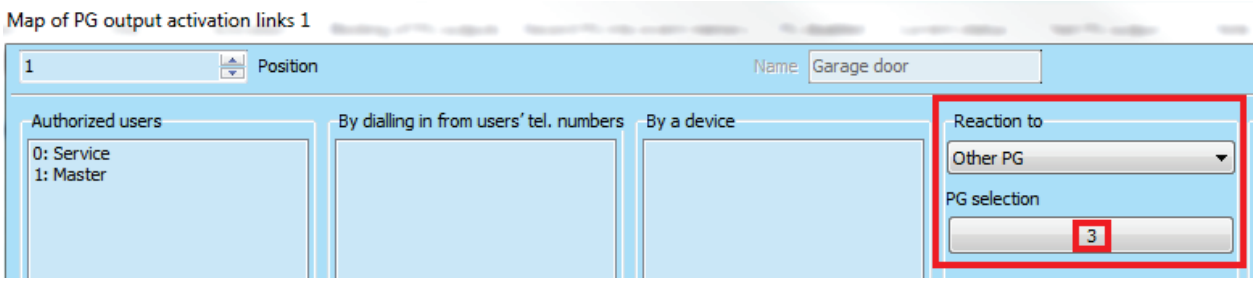
1. Automatic closing of the garage door after a pre-set time

For the case of the automatic closing of the garage door after a pre-set time, when it has remained open. This solution is based on the basic connection with one more output PG3 with a „Delayed copy“ function. This function requires you to set the time to be counted down, after which it is activated. In our case this time determines after how long a time from the moment of opening (by PG2 activation) it triggers automatic closing of the garage door (by activation of the virtual PG3 and simultaneous activation of the physical PG1 output).

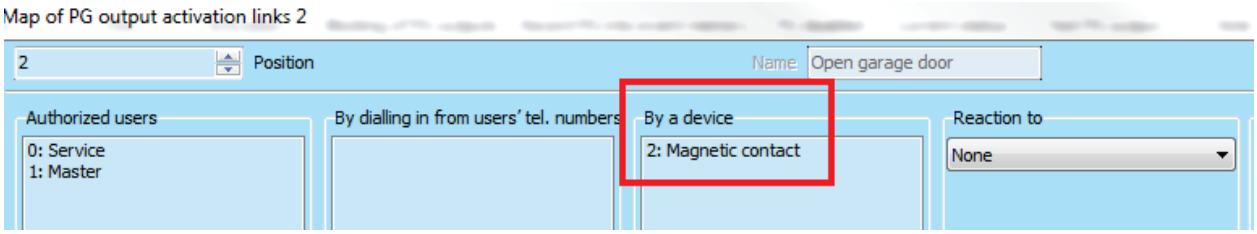


Programming:

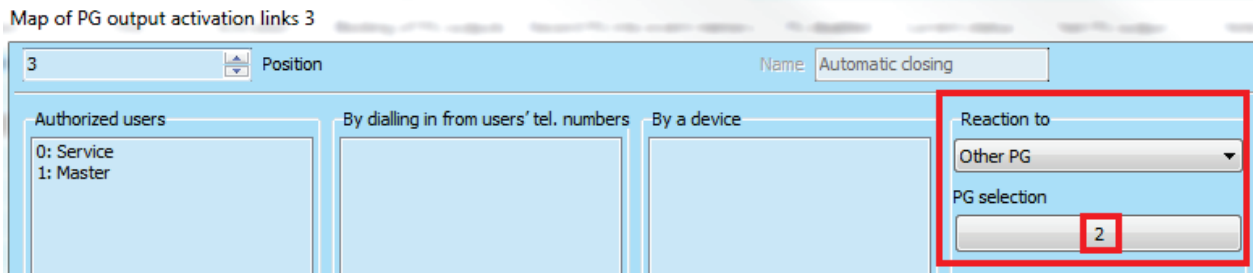
The **PG1** output is meant for the physical control of the control unit. By its activation (of the used output module) it controls the drive of the garage door (open and closed). And the automatic closing function requires it to react to another PG output. Set the reaction of the PG1 output to „**Other PG**“ with the specified selection of output no. „**3**“:



The **PG2** output copies the status of the magnetic detector placed on the garage door called „**Garage door**“:

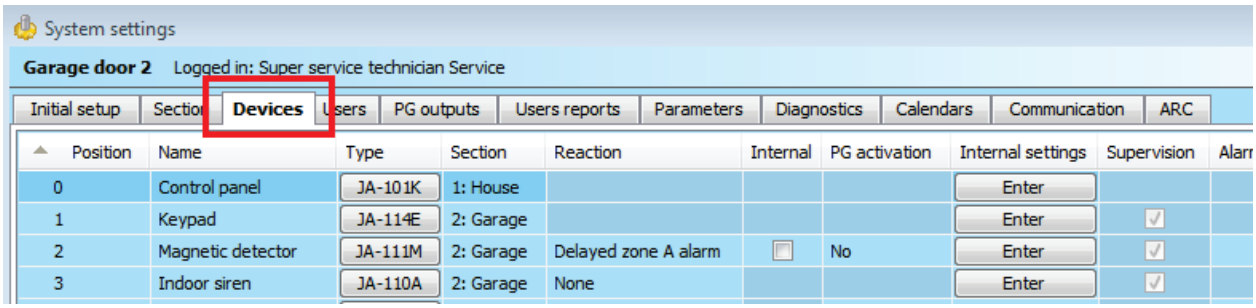


The **PG3** serves as a countdown timer of an open garage door. Set the reaction of the PG3 output to „**Other PG**“ with the specified selection of output no. „2“:

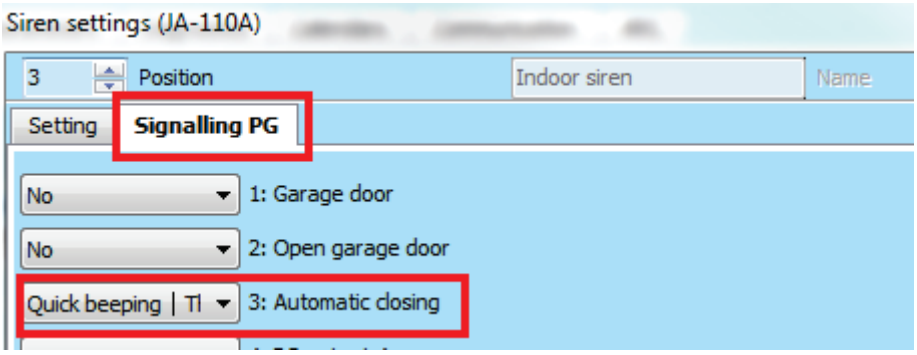


2. Acoustic indication to an open garage door for a long period

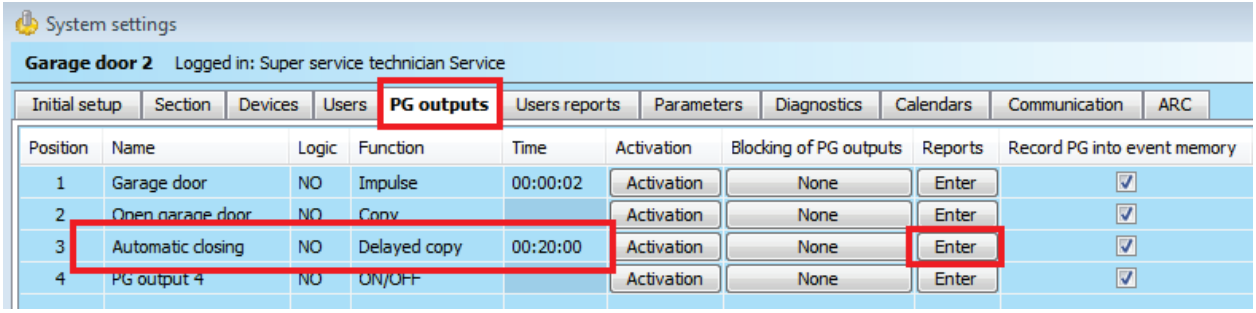
The situation when the user opens the garage door and forgets to close can be acoustically or by an SMS indicated after a pre-set time.



An indoor siren can be used as an acoustic indicator where you can set the beeping for a specific PG3 output.

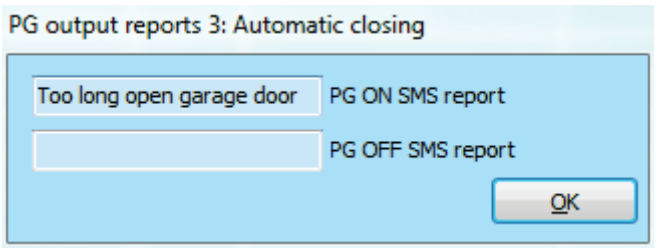


The function is very similar to the previous variant, but after a pre-set time instead of automatic closing an acoustic signal is triggered. When a different way / type of indication than by indoor siren is required, the correspondent PG output modules can be used to operate a different type of indication.

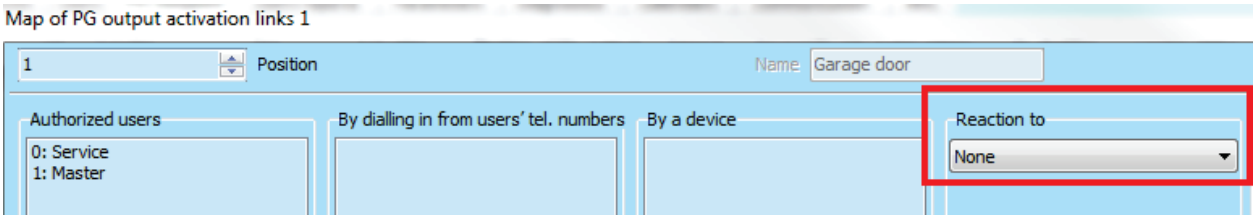


Programming:

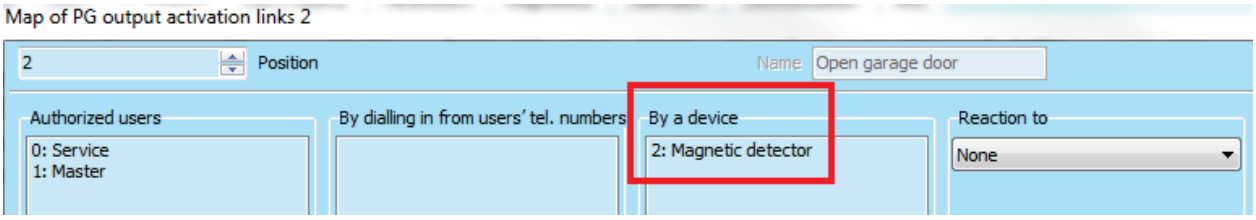
The SMS report text sent when the event „open garage door too long“ is taking place is optional and it can include up to 30 characters. The text can be edited at the Reports column by clicking the button „Enter“ on the PG3 output position:



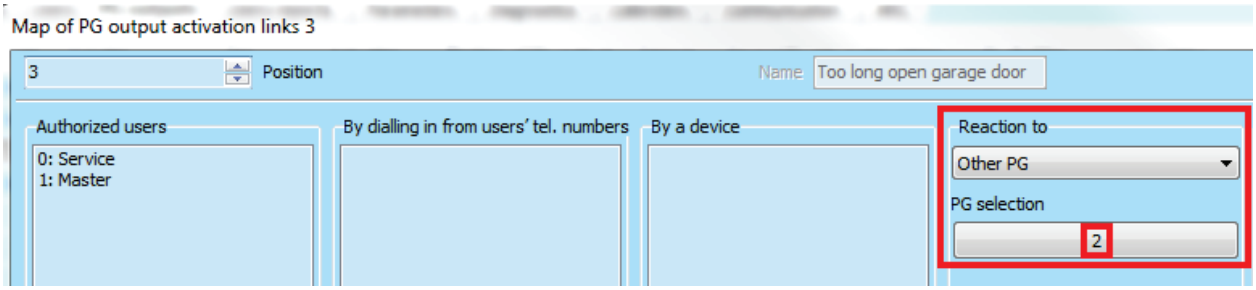
The **PG1** output serves for the control of the garage door drive unit:



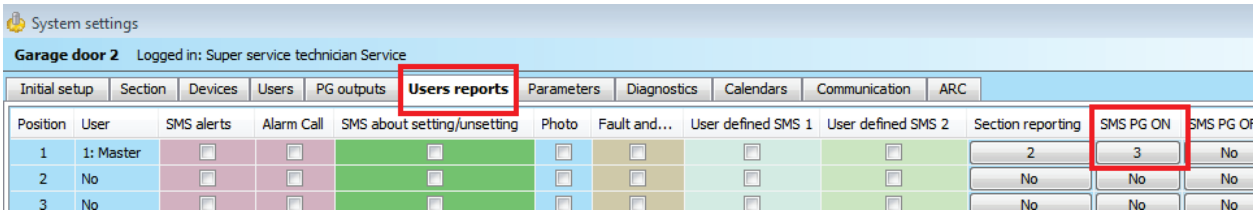
The **PG2** output copies the status of the magnetic detector placed on the garage door called „**Garage door**". Its activation triggers the PG3 output:



The **PG3** output serves for timing an acoustic indication. Set the reaction of the PG3 output to „**Other PG**" with the specified selection of output no. „2". At its activation a pre-set sirens starts to sound which indicates the garage door being open too long until the door is closed:



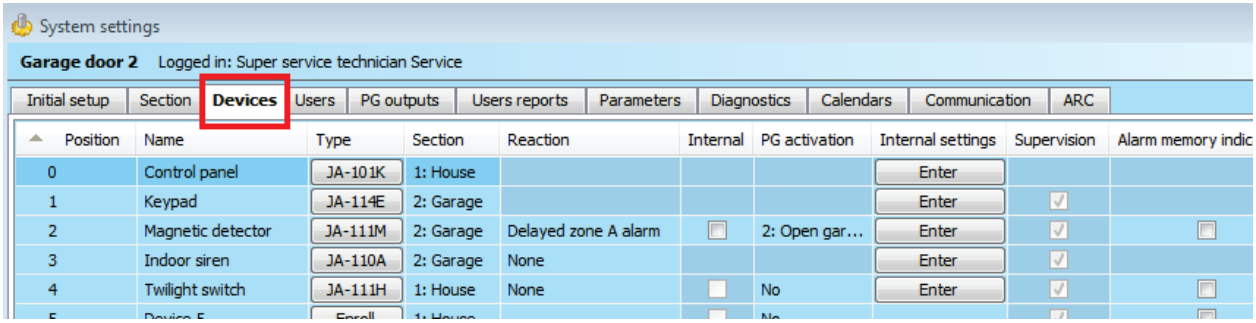
Information about a new event can be obtained by an SMS report to pre-set users (see the User reports tab and allow SMS PG ON reporting for the PG3 output).



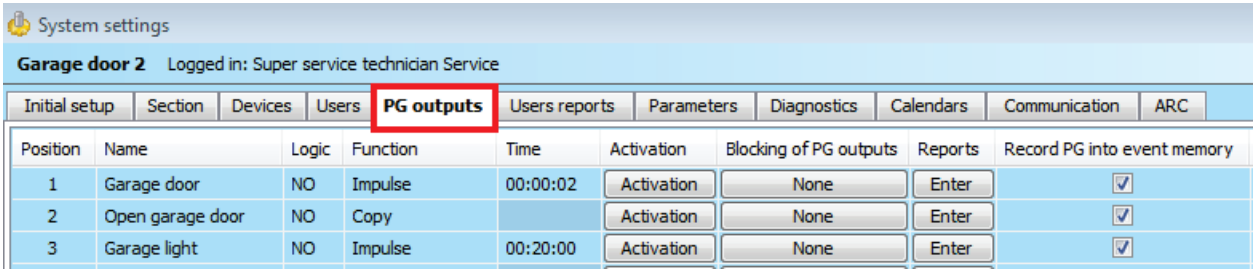
3. Automatically switching the lights on when the garage door is open

We often encounter the requirement of automatically switching the lights on when the garage door is open, and the expectation that the lights have to be switched off when the garage door is closed, but also automatically after a pre-set time when the door has remained open. Also lights don´t have to be switched on when there is sufficient light outside and this can be managed in a few ways. The simplest way to do it is the installation of a suitable twilight switch connected to the JA-111H universal input module or another option is to block the light switching by a calendar at fixed times/periods.

Except the usual devices, the JA-111H universal input module is also used to be connected to an external twilight switch with an output contact.

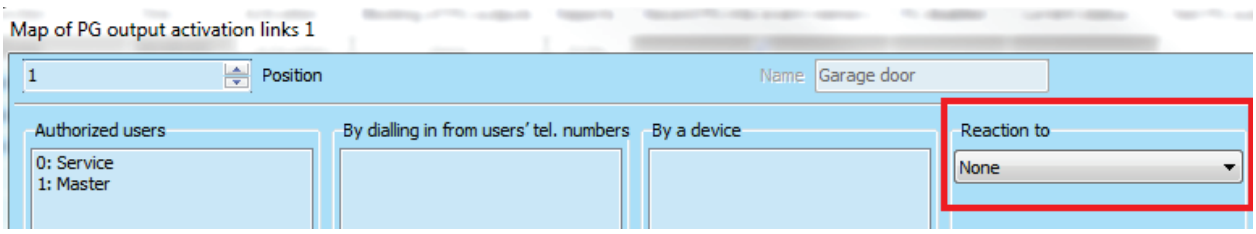


The function of automatically switching on the light uses information about garage door status from the PG3 output with the „Impulse“reaction which after a pre-set time (for example 20 minutes) automatically switches the light output off even if the garage door remains open.

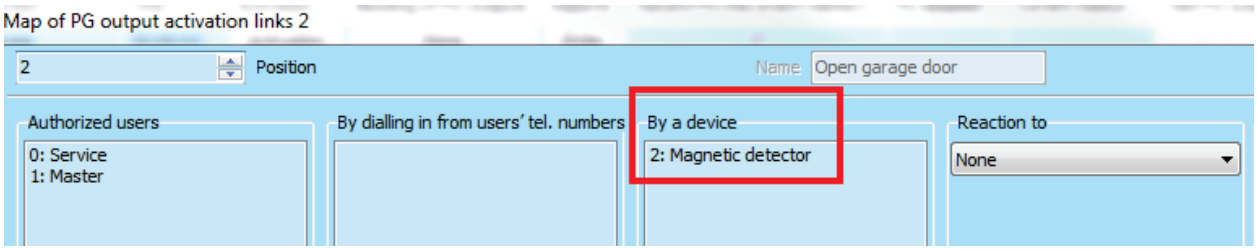


Programming:

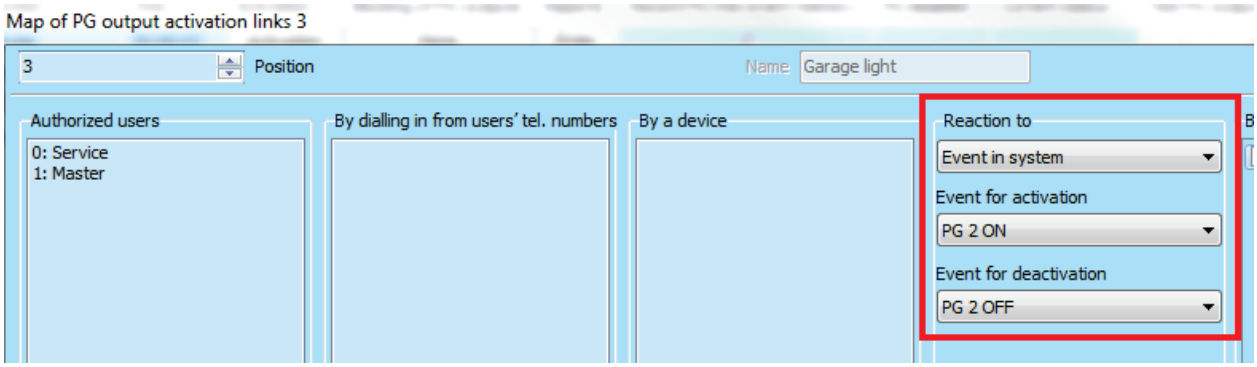
The **PG1** output serves for control of the garage drive unit:



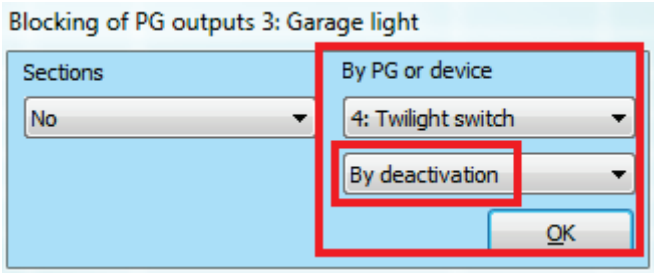
The **PG2** output copies the status of the magnetic detector placed on garage door called „**Garage door**“.



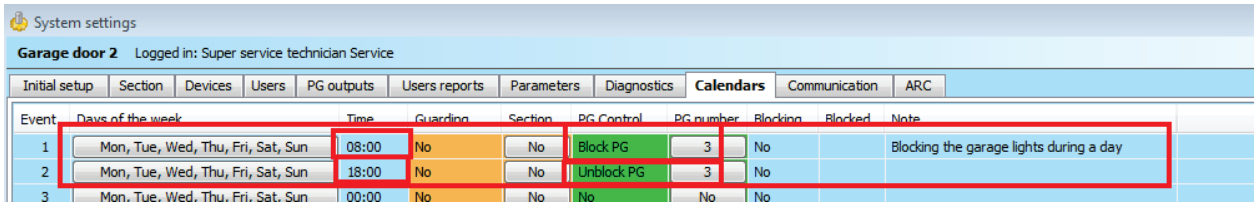
The **PG3** output is used for timing the period of switching the garage door lights. It reacts to „**Event in system**" from the PG2 output by its activation and deactivation. Taking into account the „Impulse" reaction of the output module, when it counts to the pre-set time it deactivates it regardless the PG2 status. For switching a selected light circuit PG power output modules can be used from our product range (for example JA-110N, JA-150N or AC-160x):



When there is a sufficient level of light so the garage lights are not needed and twilight switch can block light switching. Select blocking by device and its logic (blocking by activation or deactivation).

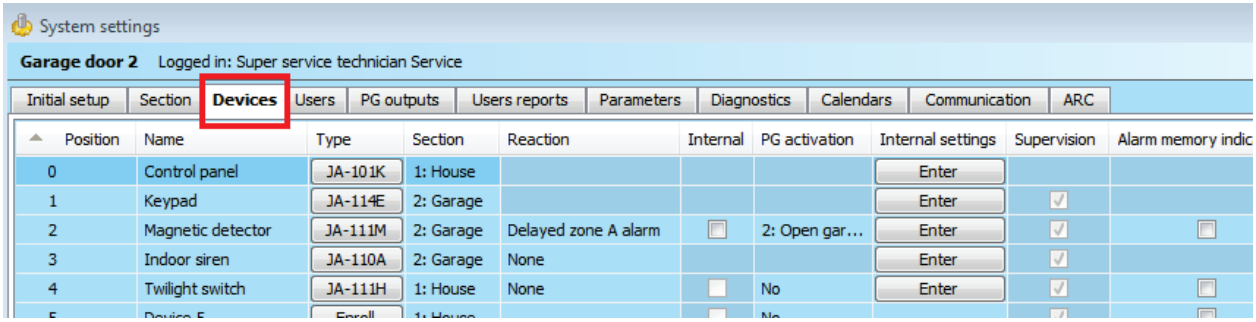


If the twilight switch is not used, then it is possible to block the lights by a calendar.

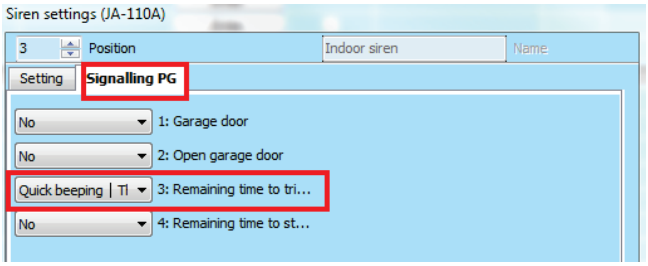


4. Acoustic indication of a garage door remaining open when closing it

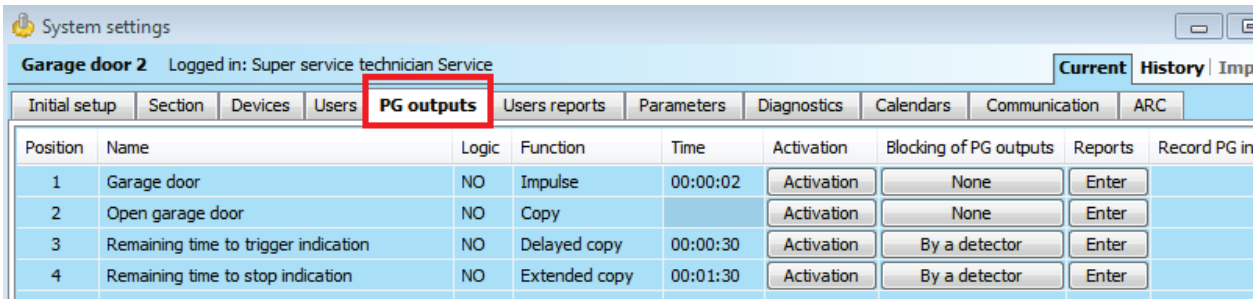
A variant of a supplementary function to control the garage door serves to warn you when the door remains open or there is some obstacle which blocks proper closing. It is based on the time determined for closing a garage door from the command when closing begins to the physical closure confirmed by the magnetic detector. Acoustic indication is not related to the garage door opening procedure.



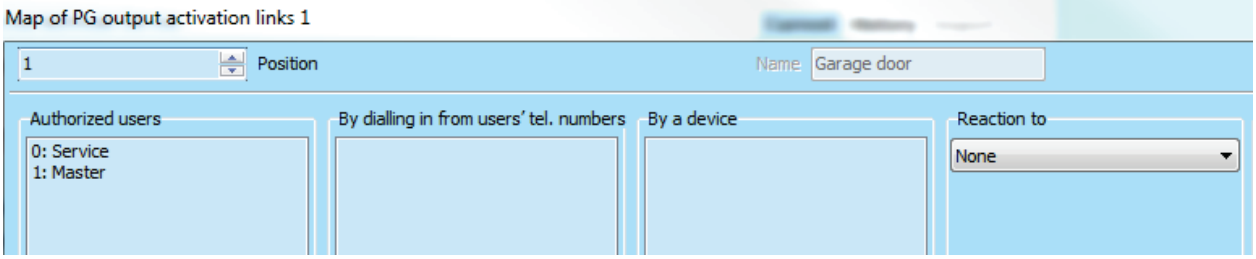
If the closing time of the gate is longer than expected one (pre-set by PG3) then the PG3 output switches on and simultaneously triggers acoustic indication in the indoor siren.



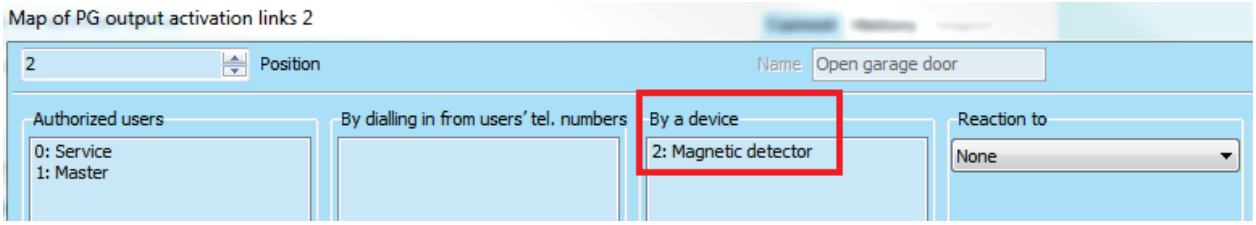
Time of siren indication depends on the PG4 output setting.



The **PG1** output serves for control of the garage door drive unit:

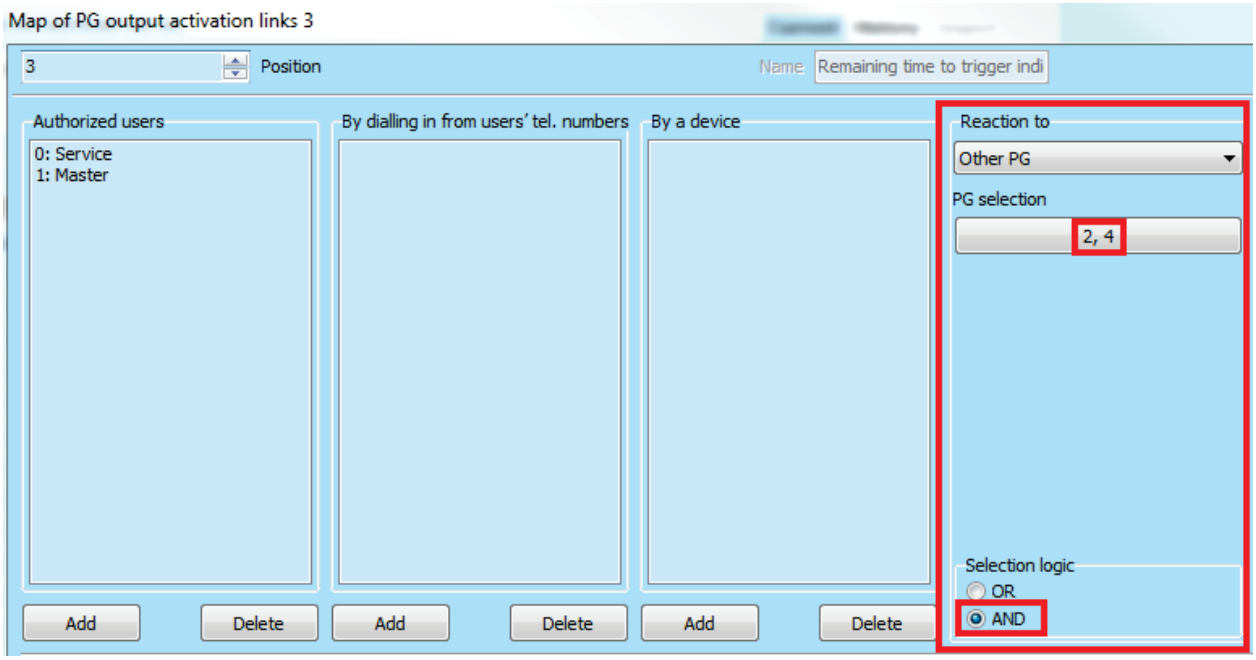


The **PG2** output copies the status of the magnetic detector (position 2) placed on the garage door called „**Garage door**“:



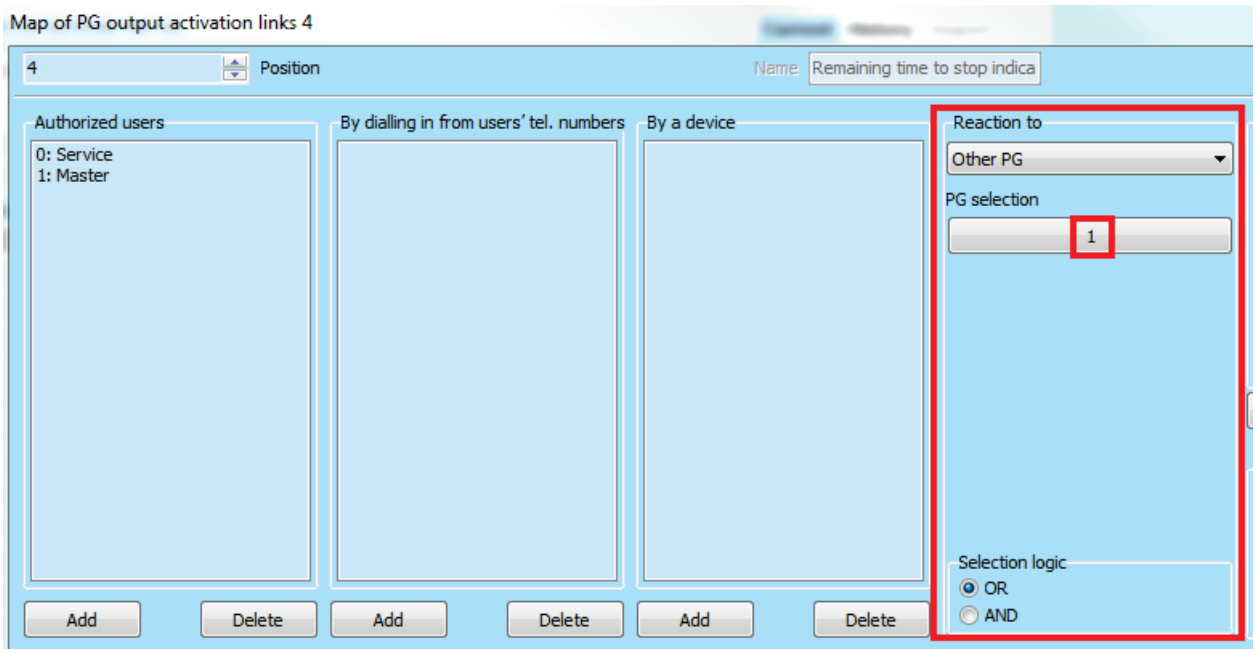
The **PG3** output associates a few functions. It triggers the timing to self-activation when two basic conditions are fulfilled simultaneously (logic function: AND). It is an open garage door (activated PG2) and a running timer of the PG4 output triggered by the start of the garage door drive. When the PG3 time expires, acoustic indication of a non-closed garage door is activated. Therefore the time of this timer has to be extended for at least 5 sec than the time for which the garage door is normally closed.

Example: If the garage door usually closes in a 25 sec period, then the timer of the PG3 output should be set to 30 sec (25+5):

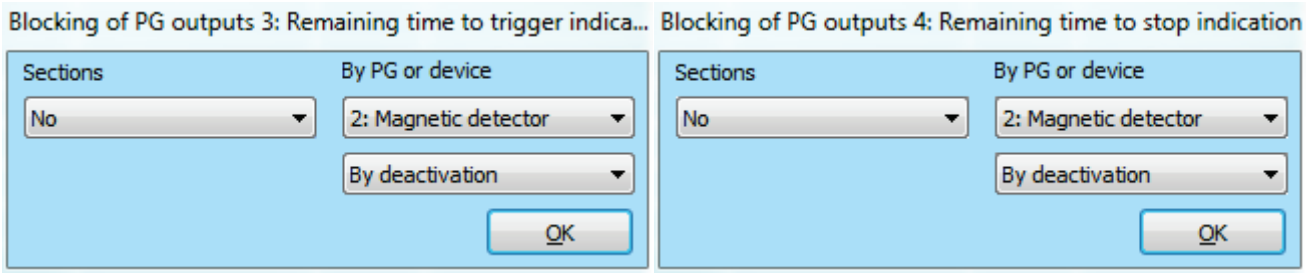


Using the **PG4** output is not obligatory. It´s use limits the maximum time to trigger acoustic indication (sounding). Timing of the PG4 output triggers the command to start the drive from the PG1 output and its pre-set time has to be the sum of times for PG3 and the required time for an acoustic indication (sounding time).

Example: If the garage door usually closes in 25 sec and the time of an acoustic indication is required to be 60 sec, then timer of the PG4 output will be set to 90 sec (25+5+60):

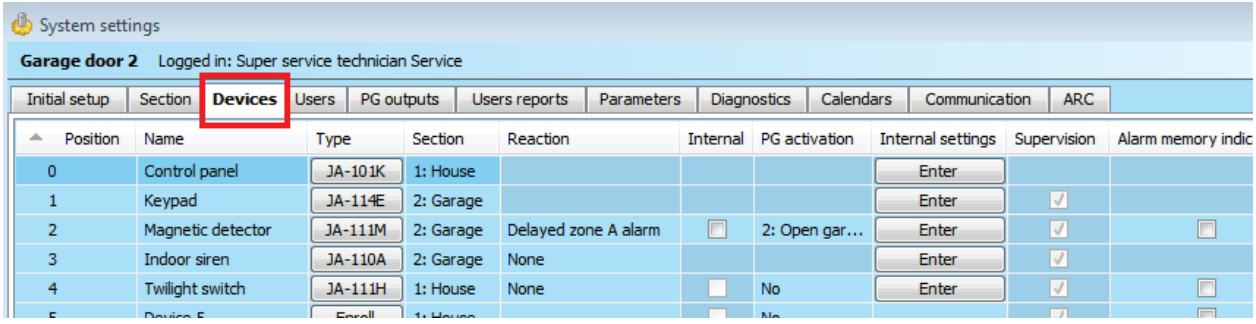


To prevent triggering of the acoustic indication, PG3 needs to be blocked when the garage door is closed. Also an acoustic indication has to be terminated at the moment when the closing garage door is blocked by some obstacle which will be then removed and the garage door is closed normally but with a delay. It requires blocking to be set for the PG4 output by „Magnetic contact" deactivation:

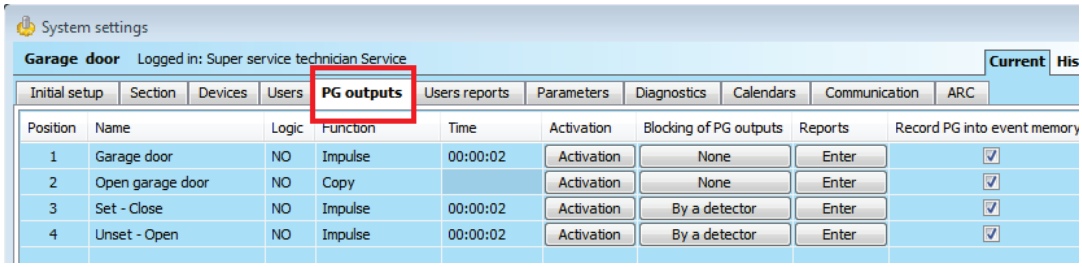


5. Automatic garage door control by the Garage section

A very useful is a variant of closing a garage door's when the "Garage" section is being set or also opening it when the section is being unset. If the user decides to close or open the garage door without setting or unsetting the section, then it is possible to use dedicated means such as keypad segment meant to control the garage door.

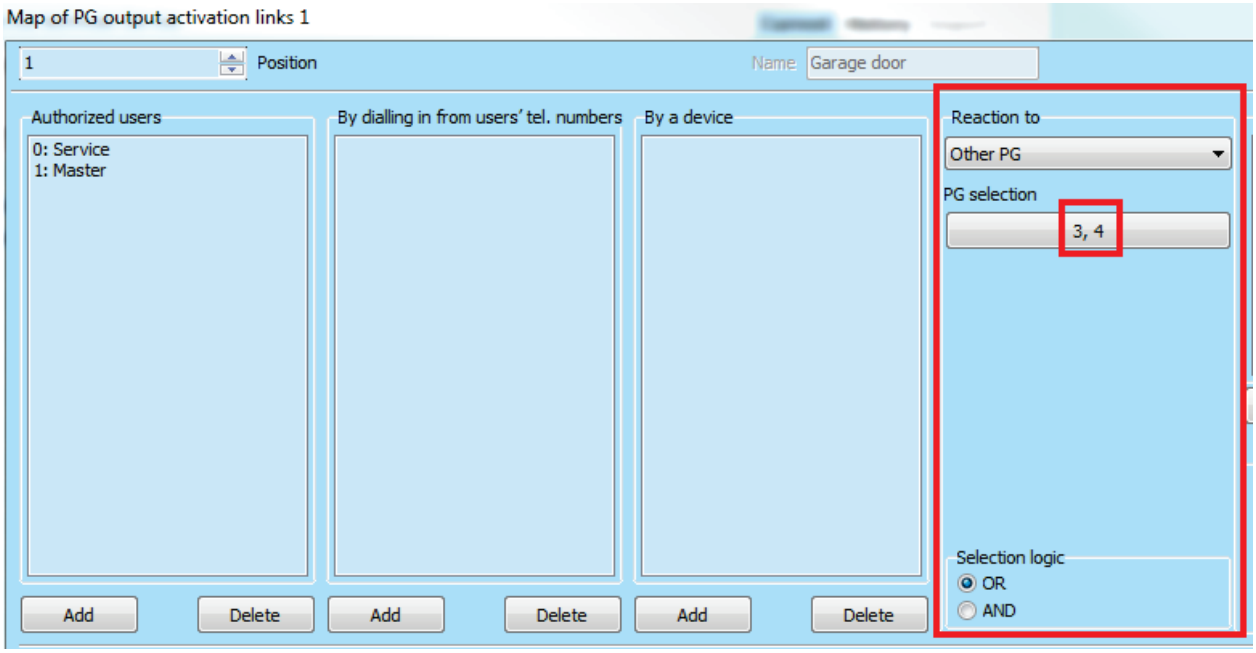


For controlling the garage door drive unit you can use one physical output module controlled by two other outputs (PG3 and PG4). All the outputs are programmed as an Impulse with a short time.

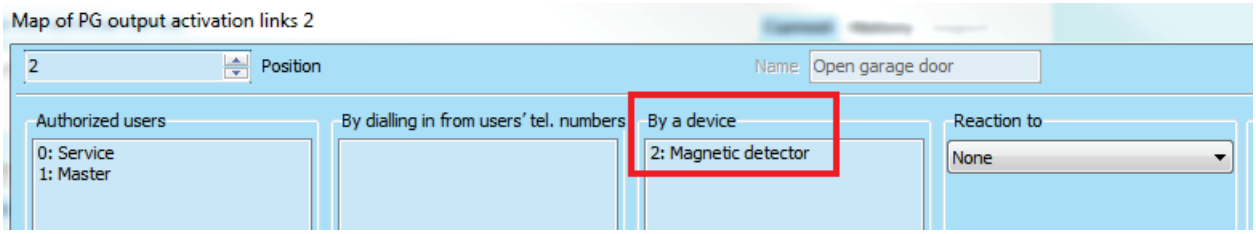


Programming:

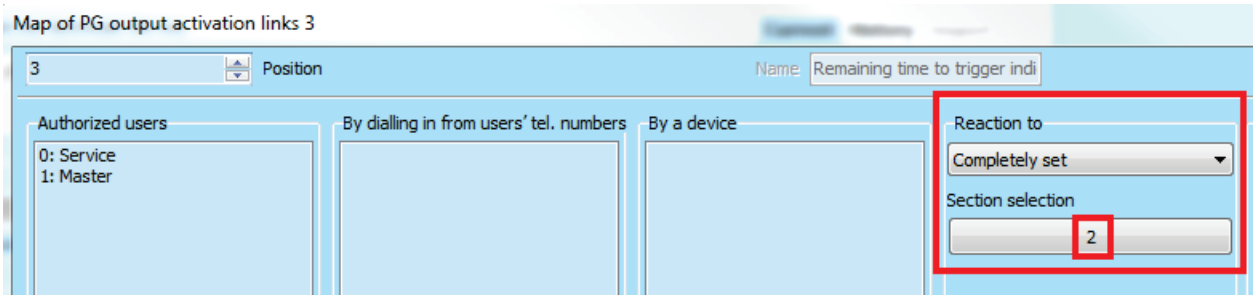
The **PG1** output serves to control the garage drive unit. This output is internally controlled by other outputs; PG3 when setting and PG4 when unsetting of the specific section with OR logic:



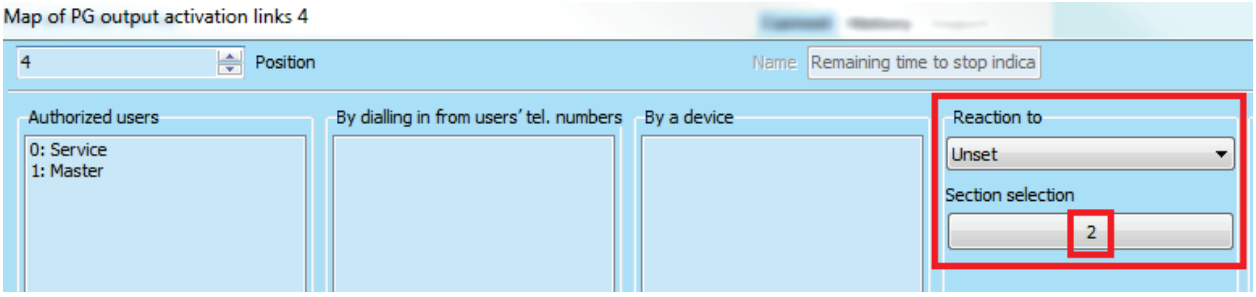
The **PG2** output copies the status of the magnetic detector placed on the garage door called „**Garage door**" and indicates its open state:



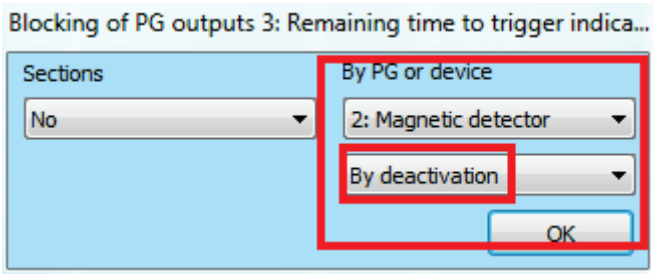
The **PG3** output is controlled automatically by an internal status pre-set to „set" section 2 and in our case it is the Garage section. Setting this section triggers the output to a pre-set time:



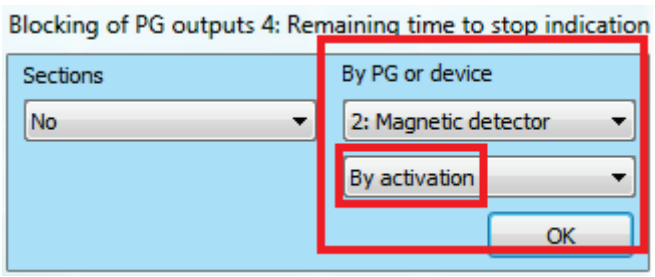
The fourth output **PG4** is controlled automatically by an internal status pre-set to „unset" section 2 and in our case it is the Garage section. Unsetting this section triggers the output to a pre-set time:



To prevent incorrectly generating an impulse for closing the garage door with setting the section when the door is closed, the output for closing the door has to be blocked at this time. Therefore blocking the garage door by a magnetic contact installed on the door has to be set to „**By deactivation**".

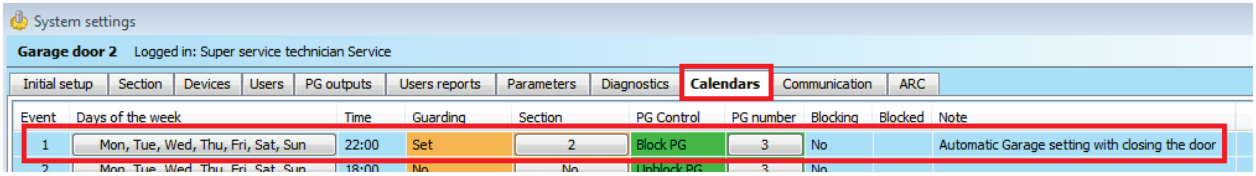


To prevent incorrectly generating an impulse for opening the garage door with unsetting when door is open, then output for opening the door has to be blocked at this time. Therefore blocking the garage door by a magnetic contact installed on the door has to be set to „**By activation**".

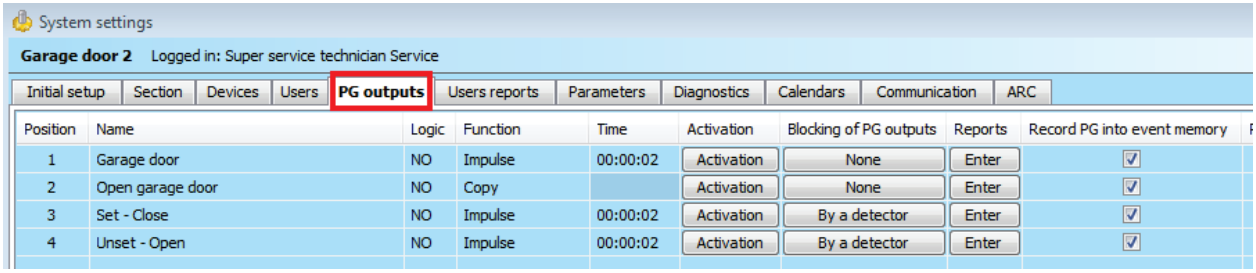


6. Automatic setting by calendar with auto garage door closing

Automatic setting by calendar with auto garage door closing or also opening uses PG output settings from a variant No. 5. By adding the function of the automatic setting of the Garage section, it is going to be set even if the garage door was open. For automation purposes the garage door can be set to be open at a specific time if needed. Manual control from a keypad control segment or remotely by a smart application works all the time.

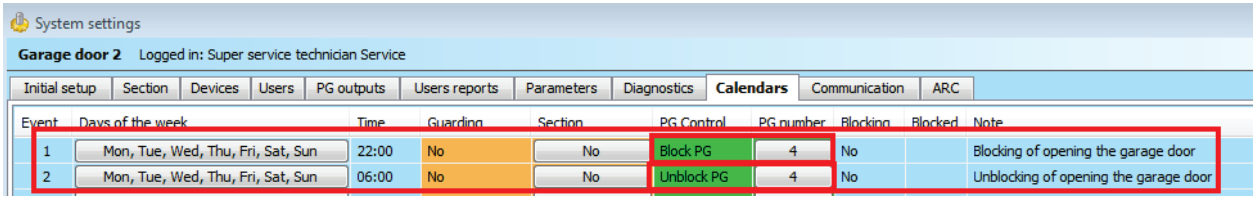


Setting Section 2 triggers the PG3 output which provides an impulse for closing the garage door. By unsetting this section the PG4 output will be activated and it provides an impulse for opening the door.

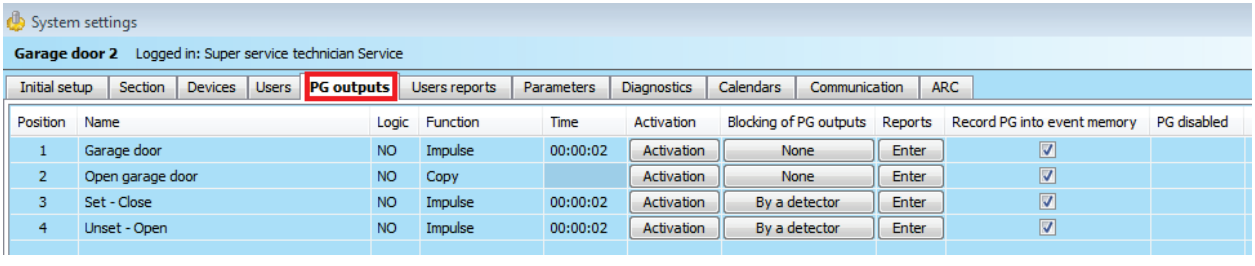


7. Blocking garage door control by a calendar

This variant is also based on variant no. 5, garage door control by section status. It can prevent opening the garage door during the required time period, typically during the night. Using a calendar you can block the programmable output meant for automatic garage door opening during section unsetting. Closing the garage door can be performed with no limitations.



When the calendar event starts blocking the PG output, unsetting doesn´t trigger the PG4 output and the garage door is prevented from being open.

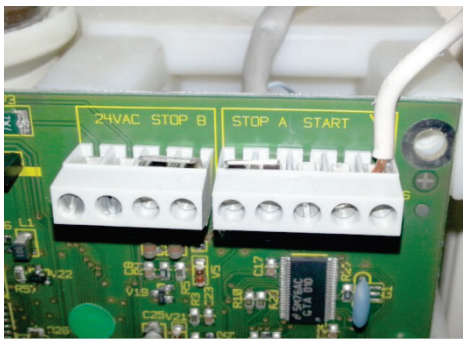


III. Practical installation example of garage door control by the JA-100 system

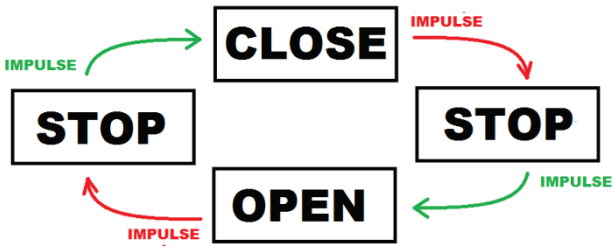
We would like to show you a typical installation of the security system integration into an already existing garage door where the customer requires its automatic closing with setting and it should be also operated locally or remotely by cell phone and also check if the garage door is open for longer than a pre-set period and having a warning when there is some obstacle preventing its proper closing.

1. A garage door with an electrical drive has some kind of electric motor. The very first thing we have to establish is how this type of motor (drive) is controlled. The control unit is usually inside the motor body or near it. In our case it is box installed next to the garage door powered by an electrical socket (230 V AC) protected by a circuit breaker especially for the unit and controlled by a remote controller supplied with the control unit.

2. After you remove the cover and there is a low voltage input terminal meant for external control to be connected and a bridge in the terminals STOP B and STOP A for a button, then a pair of START terminals to control the garage door (this terminal is important for us because thanks to this connection we will control the door) and the last terminal serves for an antenna to be connected to receive signals from the controllers supplied by the garage gate producer.
3.



4. To check the function of external control it is necessary to mutually connect the START terminals and the door should start to move. CAUTION: IR beams could cause blocking the door when closing. When the door starts to move the next interconnection of the START terminals should stop it at the current position and the following connection should move it in the opposite direction.



5. Considering the fact there is no BUS cable in this premises we have to use a wireless way to control the unit. For this purpose one of two wireless programmable output modules (PG) can be used. The JA-151N module is meant to be powered by 12 V DC and the JA-150N module requires 230 V AC. Because the garage door control unit provides an output voltage of 24 V AC for external control, we will use the JA-150N with 230 V AC.

   On the power output terminal part of the control unit you can find a pair of terminals used for the light connection activated during opening the door. The mains power output meant for the primary transformer coil (used for powering the low voltage motor) and terminal for mains power is used for powering the wireless module chosen for this purpose.

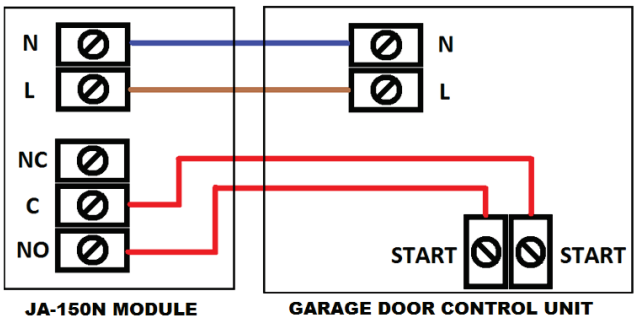
6. Having established the connection points in the control unit, we now locate the appropriate place for the JA-190PL box in which the JA-150N wireless module will be placed. Before we install it on a selected place, make sure there is stable radio contact with the control panel using for instance a JA-154J bidirectional remote controller or a JA-154E wireless keypad.

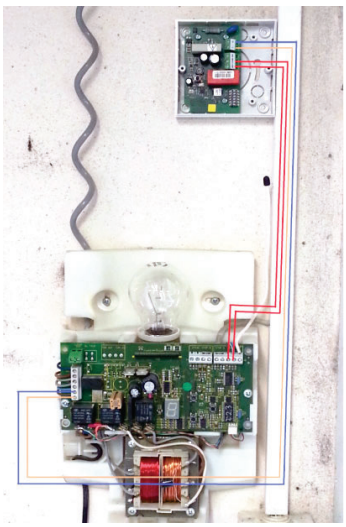
7. Before you start with installation, disconnect the mains power to the garage door control unit!

8. Connect the PG output module to the garage door control unit using 4 wires according to the picture:

   - Terminal L to the brown live wire.
   - Terminal N to the blue neutral wire.
   - Terminal C to the first low voltage START terminal

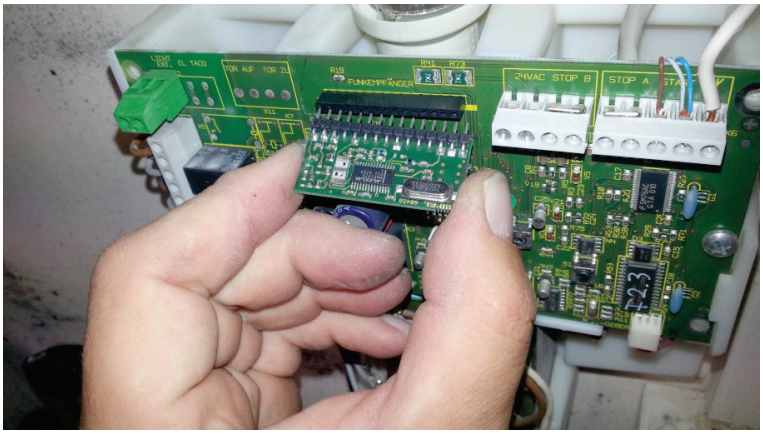
   Terminal NO to the second low voltage START terminal.



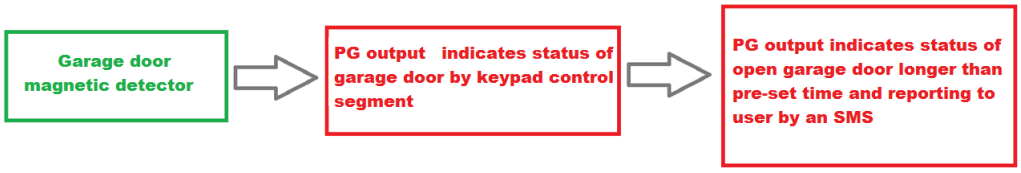


9. A keypad already installed in the garage and meant for control of this section can have one more segment added and program it for control of the garage door.
10. It is necessary to install a magnetic detector on the garage door to show the real status of the door (open / closed). It is important not only for security reasons, but also for indication of the real garage door status on the relevant keypad segment, for the option of automatically closing it when setting, the reporting of a not properly closed door or just reporting an open door after a pre-set time for an unset section.
11. We recommend the segment function called „PG indicates / controls“, which serves for the assimilation of 2 PG outputs and one of them is controlled and establishes garage door activity and the second indicates the garage door status (open/closed or improperly closed).

12. The garage door can be controlled this way by the JABLOTRON 100 security system using enrolled remote controllers, even simply by a transmitter triggered by headlight flashing in your own car or by any keypad installed in the premises where you can also check the garage door status. The garage door can also be controlled remotely by an SMS or from the MyJABLOTRON smartphone application.



13. Simple setting of the next programmable output helps you to send an SMS about an open garage door after a pre-set time (for example after 20 minutes).



14. The final form of an installation to control a garage door by the JABLOTRON 100 system.

This study case and others can be found at:

MyJABLOTRON / MyCOMPANY / MySTORAGE / Technical support / Study cases