

# REMOTE CONTROL SYSTEM

## GATE DRIVE CONTROLLER

User manual for installers

**VARIA B232 SOFT**

version 2.0

**Controller firmware version:**

The version number of the controller program is shown on the display after connecting the power supply. To check the program version, disconnect the power supply from the controller after approx. 5 seconds. connect the power again. '88' will be displayed, followed by the program version.

**Version 5.0 (01-07-2010):**

- ▶ first version of the VARIA B232 SOFT controller program

**Version 5.1 (09-11-2010):**

- ▶ added support for the 'WICKET' function from the OPEN manual control button. The operation of the OPEN input is determined in the controller menu, see table 3, page 12.

**Version 5.2 (22-03-2011):**

- ▶ Improved operation of the 'Auto-Learn' function. Under specific conditions, the overload protection threshold was incorrectly set.

**Version 5.4 (09-09-2013):**

- ▶ Auto-closing and auto-photo-closing lock functions have been added after stopping the gate with a remote control button or manual control button. bA option in the main menu.
- ▶ The function of auto-closing lock and auto-photo-closing of the gate by a photocell operating in STOP mode has been added. Suboption bA in options F1 and F2.
- ▶ Auto-learning mode added - **only times**, nC function, after completing the procedure, the controller saves new closing and opening times, leaving other parameters unchanged, such as overload thresholds and configuration of safety devices (e.g. photocells).

## SECURITY OF THE IMPLEMENTATION OF THE AUTOMATION SYSTEM

**Before starting the installation, please read the entire product installation and operation manual carefully. Failure to observe and comply with the notes in this manual may result in an accident resulting in injury to people or property damage.**

**The controller ensures correct and safe operation only if installation and use comply with the following safety rules. DTM System is not responsible for accidents resulting from improper use or unprofessional installation of devices.**

- Packaging materials should not be left within the reach of children as they pose a potential hazard;
- This product has been designed and manufactured solely for the intended use described in this documentation. Using it for another purpose may adversely affect the technical condition and operation of the device and constitutes a potential source of danger;
- DTM System is not responsible for the consequences of incorrect use, inconsistent with the intended use;
- Do not install the device in an environment with an increased risk of explosion or aggressive air;
- Automatic gates should comply with the standards as well as with any applicable local regulations, they must comply with the requirements of the EN 12604 and EN 12605 standards;
- DTM System is not responsible for any consequences resulting from design defects of the driven elements or their deformations that may occur during use;
- The installation must comply with the requirements of the EN 12453 and EN 12445 standards.
- Before starting any work on the system, disconnect all power sources;
- The electrical installation to which the automation is connected must comply with applicable standards and be properly constructed;
- The installer should provide the device with a residual current device that ensures that the devices are isolated from the main power supply. Standards require contact separation of at least 3 mm in each pole (EN 60335-1). It is recommended to use a 6A thermal fuse with an all-circuit breaker;
- Care should be taken to protect the power supply circuit with a differential switch with a threshold of 30mA;
- Safety mechanisms (EN 12978 standard) provide protection against hazards associated with the movement of moving mechanical components, such as crushing, snagging or detachment;
- DTM System is not responsible for the safety and proper operation of the device if components that are not products offered by DTM System are used;
- Only original parts should be used for servicing;
- Do not modify the components of the device in any way;
- The end user must be informed about how to operate it, how to deal with failures and about the dangers arising from the use of the device;
- The device can only be operated by properly trained adults
- Control devices should be out of the reach of children to protect the automation system against accidental activation;
- Service is permitted only by qualified personnel;
- During assembly or repair work, be careful and do not wear jewelry, watches or loose clothing;
- After installation, it is necessary to check whether the device is correctly positioned and whether the controlled devices and safety system operate properly;
- Protection systems against crushing or injury (e.g. photocell systems) must work properly after mounting and connecting the drive to the network;
- Radio remote control can only be used when the force used is set to a safe value;
- Radio remote control may only be used if the gate movement can be observed and there are no persons or objects in the movement area.



## SAFETY OF USING THE AUTOMATION SYSTEM

**Failure to observe and comply with the notes in this manual may result in an accident resulting in injury to people or property damage. It is necessary to read the following warnings carefully. The gate drive ensures correct and safe operation only if the installation and use complies with the following safety rules. DTM System is not responsible for accidents resulting from improper use or unprofessional installation of devices.**

- While the automation system is operating, both children and adults must keep a safe distance from the operating automation.
- The automation system can only be operated by properly trained adults.
- Control devices should be out of the reach of children to protect the automation system against accidental activation.
- Movement between the gate leaves is only allowed when it is fully open.
- The movement of automation elements should not be obstructed, any obstacles impeding movement should be removed.
- The operation and good visibility of signal lamps and information boards must be ensured.
- Manual operation of the system is only possible when the power is disconnected.
- In the event of a failure, disconnect the power supply and then call the service center who will make the necessary repairs.
- Do not perform any repairs or maintenance on the device yourself. The device may only be serviced by qualified personnel.
- Make sure that people who install, maintain or operate the device follow these instructions. Keep these instructions where you can quickly refer to them when needed.

## WARRANTY

The manufacturer DTM System provides the devices that are operational and ready for use. The warranty is granted for a period of 30 months from the date of sale by the manufacturer. The warranty period is determined based on the manufacturer's warranty seals identifying the production batch, placed on each product. To recognize the warranty, it is necessary to present a sales document. The manufacturer undertakes to repair the device free of charge if there are defects due to the manufacturer's fault during the warranty period. The defective device must be delivered to the place of purchase, including a copy of the proof of purchase and a brief, unambiguous description of the damage. The cost of disassembly and assembly of the device is borne by the user. The warranty does not cover batteries in remote controls, any damage resulting from improper use, unauthorized adjustments, alterations and repairs, and damage caused by lightning, overvoltage, or short circuit of the power supply network. The detailed terms and conditions of granting a guarantee are regulated by relevant legal acts.



## 1. Terms used

- ▶ actuator power regulation - gradual change in actuator supply voltage, which translates into its power. In most cases, it is not necessary to operate the actuator at maximum power. For safety reasons and to protect the gate structure against excessive forces that could damage it, it is recommended to set the optimal power of the actuators (page 15).
- ▶ manual control - control using buttons connected by wires to the VARIA controller terminals.
- ▶ actuator opening time - time required to fully open the gate moved by the actuator.
- ▶ actuator closing time - time required to fully close the gate moved by the actuator.
- ▶ auto-closing - automatic activation of the actuator closing function after the time set in the VARIA controller program. The time after which automatic closing starts is counted from the moment the gate stops.
- ▶ auto-photo closing - automatic activation of the actuator closing function after the time set in the VARIA controller program. The time after which automatic closing begins is counted from the moment the photocell line is violated and released.
- ▶ photo test - automatic checking of the operation of photocells just before the gate starts moving.
- ▶ actuator overload - an increase in the current consumed by the actuator, most often caused by an obstacle appearing in the gate's path.
- ▶ auto-learning - a function of automatic adaptation of the controller's operating parameters to the installation conditions.
- ▶ access lock - protection against access to the controller menu by unauthorized persons. Access is possible after entering a previously programmed 3-digit PIN code.
- ▶ remote entry of the remote control - the procedure of entering the remote control into the controller memory, without the need for physical access to the controller board.
- ▶ blocking remote entry of remote controls - blocking the remote control entry function (total or for selected remote controls).
- ▶ warning mode - signal lamp operating mode. In the 'S1' warning mode, the lamp flashes or lights up according to the current state of the gate, in the 'S2' warning mode, the state of the gate that is not closed is additionally signaled. The 'S3' mode is intended for lamps with a built-in pulser.
- ▶ lighting mode - Operating mode of the signal lamp. In the 'oS' lighting mode, the lamp always lights up continuously, regardless of the gate's status. The lamp turns off automatically after 4 minutes. from the moment the actuator stops. It can be turned on/off independently using the STOP button of manual control or remote control.
- ▶ service function - A function enabling the activation of signaling when the set number of gate operation cycles has been exceeded.
- ▶ leaf delay - Delay time between the start of opening or closing of actuator 1 and 2.

## 2. Introduction

This manual is devoted to the VARIA B232 SOFT controller. The basic application of this controller is to control double-actuator gate drives. The VARIA B232 SOFT controller enables both remote and manual control of the operation of two gate actuators. It is powered by 230V 50Hz mains voltage, which allows for trouble-free connection of most actuators available on the market, containing a single-phase AC motor with two directions of rotation. The VARIA B232 SOFT controller allows you to connect safety devices such as photocells, pressure strips, and also has 2 separate overload systems. The controller also detects and uses the operation of the actuator's internal limit switches. This controller is equipped with a relay controlling the gate bolt and an additional output relay that can be activated with a radio remote control. This relay can operate in bistable or monostable mode, giving the ability to control an additional device (lighting, electric strike, etc.). In addition, the controller enables gradual adjustment of the actuator power and has a slowing down function during start and stop. The controller has a built-in radio receiver with memory that can accommodate 700 remote controls. The remote control system uses Microchip's KEELOQ® dynamically variable code. The VARIA B232 SOFT controller is placed in an aesthetic IP-55 surface-mounted housing.

### 3. Technical data

#### Basic parameters

• Power supply	230V AC, 50 Hz
• Power consumption in idle state	8VA
• Operating temperature (min/max)	-20°C /+55°C
• Housing external dimensions (width x depth x height)	180 x 95 x 241 mm
• Assembly method	surface-mounted housing
• Weight	1,7 kg

#### Outputs / Inputs

• Actuator output (voltage / maximum power / built-in capacitor / quantity)	230VAC / 2 x 300W / none / 2
• Actuator power regulation	electronic in 30 steps
• Overload protection	programmed in 255 steps
• Signal lamp output	relay (max. 230VAC / 6A), 4 operating modes
• Peripheral power output (photocells, etc.)	24VDC,
• Power output for photocell transmitters	24VDC (see photo test function)
• Gate electric lock output	12/24VDC, switched on for 10 sec. when opening starts
• Additional output	relay (potential-free), max. 1A/24V AC/DC, operating in bistable or monostable mode with a switch-on time of 1...255 sec.
• Semaphore output / quantity / maximum current	OC type / 2 / 50mA each
• Photocell inputs / number	NC type / 2
• Manual control input for OPEN/WICKET mode	NO type (input operation programmed in the menu)
• Manual control input for CLOSING mode	NO type
• Manual control input for STOP mode	NC type
• Manual control input for STEP BY STEP mode (opens - stop - closes - stop)	NO type
• Cooperation with limit switches	only internal actuators (detection of disconnection of the current circuit - enabled in the menu, 'LS' option)
• Adjustment of opening and closing times and soft start and stop phases	1 sec to 255 sec (accurate to 1 sec.)
• Auto-closing and auto-photo-closing time adjustment	1 sec to 255 sec (accurate to 1 sec.)
• Delay time of movement between the leaves adjustment	1 sec to 10 sec (accurate to 1 sec.)

#### Control part

• Skipping the STOP step after the actuator stops automatically, in STEP BY STEP mode	yes
• Additional function of the lighting switch	yes, under the STOP button (when the signaling is in lighting mode)
• Programmable actuator auto-closing function	yes, with the possibility of deactivation using the remote control or manual control button
• Programmable auto-photo closing function	yes, with programmable delay time, switched on separately for the PHOTO 1 and PHOTO 2 inputs, can be deactivated using the remote control or manual control button
• Programmable overload protection	yes, the switch-off threshold is set step by step, separately for actuator 1 and 2
• Photo test (testing photocells before gate movement)	yes, switched on separately for PHOTO 1 and PHOTO 2 inputs
• Photocell operating modes	stop, continuation, reverse movement, no reaction, set separately for the OPEN and CLOSE directions, separately for the PHOTO 1 and PHOTO 2 input

<ul style="list-style-type: none"> <li>• Auto-learning function</li> <li>• Protection against accidental start-up</li> </ul>	<p>yes, two modes An and nC yes, double-press function on the remote control</p>
<ul style="list-style-type: none"> <li>• Programmable service reminder function</li> <li>• Menu access lock (PIN code)</li> <li>• Software user interface</li> <li>• Hardware user interface</li> </ul>	<p>yes yes simple menu with a tree structure two-digit seven-segment LED display, two buttons</p>
<ul style="list-style-type: none"> <li>• Microcontroller</li> <li>• Device configuration memory</li> </ul>	<p>Microchip, 8-bit of the 18Fxxx family non-volatile, EEPROM integrated circuit mounted in the socket (convenience for the service)</p>
<ul style="list-style-type: none"> <li>• Protection against critical events</li> </ul>	<p>modern microcontroller architecture (systems: Watch Dog, Brown Out Detect, Power On Reset), melting fuse in the motor power supply system, polymer fuses in the controller power supply system and in the accessory power supply circuit, varistor at the mains power input.</p>
<ul style="list-style-type: none"> <li>• Blocking the auto-closing and photo-closing functions after stopping the gate with a remote control button or manual control button</li> </ul>	<p>yes, enabled in the menu, option bA (tab.2)</p>
<b>Radio part</b>	
<ul style="list-style-type: none"> <li>• Radio module</li> </ul>	<p>integrated, superheterodyne, ensuring high reliability, repeatability and immunity to radio interference</p>
<ul style="list-style-type: none"> <li>• Transmission security</li> <li>• Modulation type / frequency</li> <li>• Antenna input impedance</li> <li>• Antenna</li> </ul>	<p>64-bit Keeloq® dynamically variable code ASK / 433,92 MHz 50 W internal, terminals for connecting an external antenna</p>
<b>Built-in radio receiver</b>	
<ul style="list-style-type: none"> <li>• Memory capacity</li> </ul>	<p>700 remote controls, each with an individual number in memory</p>
<ul style="list-style-type: none"> <li>• Memory cell</li> </ul>	<p>contains data about each remote control and its configuration (assigning functions to buttons)</p>
<ul style="list-style-type: none"> <li>• Remote control configuration</li> </ul>	<p>possibility of assigning any of the six functions (OPEN, STOP, CLOSE, STEP BY STEP, WICKET, ADDITIONAL EXIT) to any button</p>
<ul style="list-style-type: none"> <li>• Possibility to erase the entire memory</li> <li>• Possibility to delete a single remote control</li> <li>• Blocking access for a single remote control</li> <li>• Possibility to enter the remote control without having access to the controller buttons</li> <li>• Blocking the remote adding function</li> <li>• Function of copying remote control settings from remote control no. 001</li> </ul>	<p>yes yes yes yes (remote control registration function) yes yes</p>

## 4. Installation

### 4.1. Important reminder



#### CAUTION!

Electrical and drive automation installations must be performed by experienced and qualified personnel in accordance with applicable law. The devices contain dangerous voltages of 230V 50Hz, all connections should be made with the voltage turned off. The installer's task is to install the system in a safe enough way to minimize the risk associated with its use. The person who installs the device without complying with all applicable regulations is responsible for any damage that the device may cause.

### 4.2. Description of the device and method of installation

The VARIA B232 SOFT controller consists of a motherboard and a housing. The main board (Fig. 1) has a power supply and an executive system based on specialized relays, as well as connectors for connecting the supply voltage, actuator and protection, control and signaling elements. Additionally, it has a microprocessor control system with a display and buttons and a memory system. The controller housing has an IP54 tightness rating. The weakenings located on the bottom of the housing are used to place the screws that secure the controller to the surface. Weakenings in the side walls of the housing are used to guide the controller installation cables. After making the hole, install the included rubber gland with a diameter of 25 mm. The cables should be led to the device through the lower part of the housing. When making holes in the housing, remember to ensure the required degree of tightness "IP". The presence of supply voltage is indicated by the right dot lighting on the LED display.

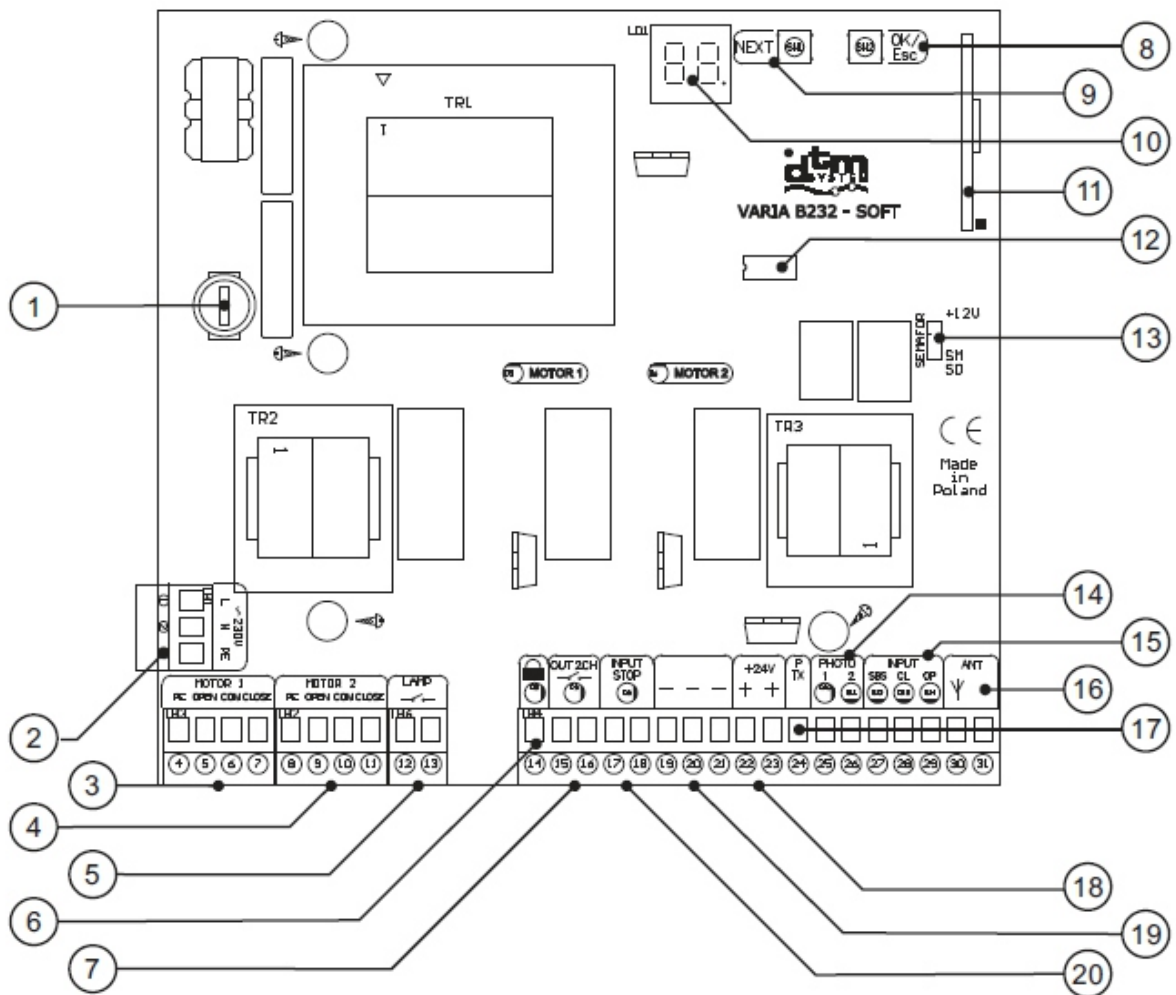


Fig.1. View of the controller's motherboard, with the most important elements marked





- 
- 1 fuse (4A/250V, T)
- 2 connector for connecting 230V AC power supply
- 3 connector for connecting engine 1
- 4 connector for connecting the engine 2
- 5 connector for connecting a signal lamp, max. 230V, 6A
- 6 gate electrolock output 12/24 VDC (programmed) - low potential
- 7 additional relay output (NO)
- 8 OK/Esc button used to confirm or withdraw the selection made
- 9 NEXT programming button used to switch options and change settings
- 10 LED display
- 11 radio receiver module
- 12 non-volatile memory chip (EEPROM)
- 13 additional traffic light connector (open collector type)
- 14 connector for connecting the F1 and F2 photocell outputs
- 15 connector for manual control buttons STEP BY STEP (SBS), CLOSE (CL), OPEN (OP)
- 16 connector for connecting an external antenna
- 17 photocell transmitter power connector (necessary when using the photo test) - +24V potential
- 18 +24 VDC accessory power connector
- 19 accessory common connector (ground potential)
- 20 connector for connecting the STOP button (NC)

### 4.3. Description of the electrical connections of the VARIA B232 SOFT controller

#### 4.3.1. Mains power terminals 230VAC, 50Hz (L, N, PE)

Connect the phase (L), neutral wire (N) and protective wire (PE) to the appropriate terminals.

#### 4.3.2. Terminals for connecting MOTOR 1 and MOTOR 2 actuators (PE, OPEN, COM, CLOSE)

The actuator that will open first should be connected to the MOTOR1 terminals (important when the leaves close "overlapping"). The second actuator should be connected to the MOTOR2 terminals. Motor capacitors should be connected between the OPEN and CLOSE terminals of the actuators, appropriate for the given type of actuators. Connect the actuator's opening cable to the OPEN terminal, the closing cable to the CLOSE terminal, the common cable to the COM terminal and the actuator's protective cable to the PE terminal.

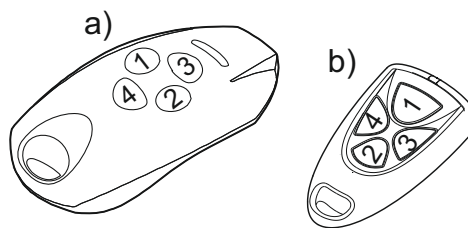


Fig.2. Remote controls with button numbers marked on them.  
a) NEO, b) VICTORY

#### 4.3.3. Terminals for connecting a signal lamp (LAMP)

The terminals are used to connect lighting or optical signaling of the current operating status of the actuator. There are NO contacts of the relay (potential-free). Use a signal lamp with a voltage of 230V, max. 6A. Lighting can be connected to the signaling output instead of a signaling device, but the output operating mode should be switched to lighting in the controller menu (see table 3).

#### 4.3.4. Terminals for connecting the gate bolt (🔒)

The controller is equipped with an output that can control the gate bolt. Depending on the controller settings ('EL' option in the menu), it may be a 12VDC or 24VDC electric lock. Please remember about the maximum load capacity of the accessory power output, a total of 1.3A.

#### 4.3.5. Additional Output Terminals (OUT 2CH)

The controller is equipped with a relay with NO type contacts with a maximum load capacity of 30VAC/DC 1A, enabling the control of an additional device, such as an electric strike, an additional controller, lighting (when using an additional relay with an appropriate load capacity), etc.

**CAUTION!**

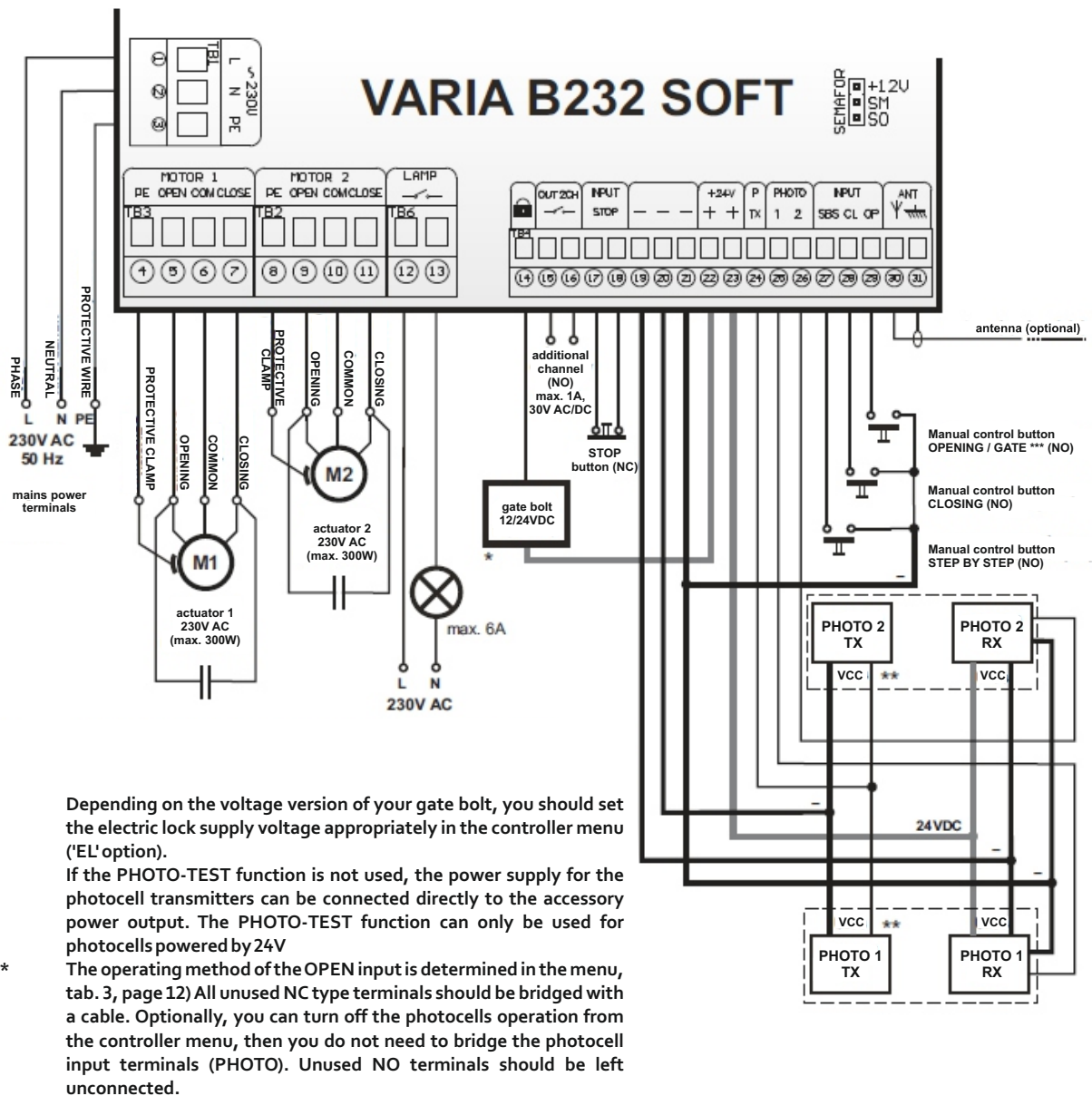
Settings of the control panel that are not adapted to the installation conditions may soon lead to its destruction and loss of warranty! After completing the stage of creating the installation and connecting devices, it is necessary to program the control panel to adapt its operating parameters to the current installation, in particular:



- ▶ always adjust the power of the actuators
- ▶ always use the auto-learning function ('An' option in the controller menu), thanks to which the opening and closing times and the overload protection threshold will be set (page 16, point 12)

The intended connections must be carefully observed. If you are unsure, do not try, but refer to the relevant detailed technical data sheets of the installed devices. Incorrect connections may cause serious damage to the controller and other devices.

**DO NOT CONNECT ADDITIONAL MOTORS IN PARALLEL.**



#### 4.3.6. Accessory power supply terminals (+24VDC)

The controller has 24VDC accessory power outputs with a maximum load capacity. 1A. The outputs have two equivalent screw terminals. Please remember that the load capacity of the +24V output and the photocell transmitter power output (PHOTOTX) is 1.3A in total.

#### 4.3.7. Terminals for connecting PHOTO TX, PHOTO 1 and PHOTO 2 photocells

If photocells powered by 24V are used, with separate power supplies for the transmitter and receiver, then the transmitter power supply should be connected to the PHOTO TX output (+24V potential), and the receiver power supply should be connected to the +24VDC accessory power supply output. If the photocells have a common power supply for the transmitter and receiver, then their power supply should be connected to the PHOTOTX output. This method of connection will allow the use of the PHOTO-TEST function, which checks the operation of photocells before each gate movement and blocks the movement if a failure is detected. The PHOTO-TEST function significantly increases the level of safety. To enable the PHOTO-TEST function, see table 3. The PHOTO 1 input is dedicated to the external photocell (installed outside the property), the PHOTO 2 input is dedicated to the internal photocell (installed inside the property). Correctly associating the photocells with the appropriate inputs is crucial when using the automatic learning function. The controller will select appropriate settings for the external and internal photocells.

#### 4.3.8. Manual control terminals INPUT STOP and INPUT (SBS, CL, OP)

A momentary (monostable) NC type button should be connected to the INPUT STOP terminals. If the button is not used, the terminals must be shorted with a wire.

A momentary NO type button can be connected to the SBS terminal, which will control in 'step by step' mode (OPEN - STOP - CLOSE - STOP). A momentary NO type button can be connected to the CL terminal, which will activate CLOSING. A momentary NO type button can be connected to the OP terminal, which, depending on the settings, will activate the OPEN or GATE function. All unused NO inputs should be left unconnected. Activating the manual control button involves pressing it momentarily.

#### 4.3.9. Terminals for connecting a radio antenna (Ψ , ⚡)

The controller has a radio receiver antenna input. In the factory new controller, an internal antenna with a length of 170 mm is connected to the terminal. To increase the range of the radio remote control, connect an external rod antenna. Connect the antenna coaxial cable to the terminal Ψ (cable center core) and to the terminal ⚡ (cable screen). To achieve optimal radio range, remember to:

- ▶ negative impact of the proximity of the receiver antenna to power equipment and metal objects
- ▶ negative impact of radio interference from other sources
- ▶ negative impact of dense buildings, damp or reinforced concrete walls
- ▶ reduced range when the remote control battery is exhausted
- ▶ increase in range by increasing the height of the receiver antenna
- ▶ using the appropriate coaxial cable for the external antenna (e.g. RG58)

#### 4.3.10. Additional traffic light connector - semaphore

An external traffic light in the form of a road semaphore can be connected to the output via an additional connector. The output load is 50mA, which is sufficient to control electromagnetic relays with a 12VDC coil power supply. The connector is a three-pin 'goldpin' with the following signals:

- ▶ SM open collector output, active when the gate is neither fully open nor fully closed.
- ▶ SO open collector output, active when the gate is fully open.
- ▶ common terminal +12VDC

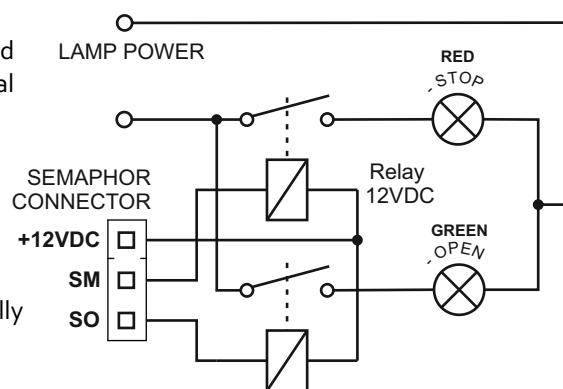


Fig.4. Method of connecting additional signal lights

When the SM or SO output is active, ground potential appears on it.

The relays shown in Fig. 4 are not included in the kit. Any electromagnetic relays with a 12VDC coil and with the load capacity and operating voltage of the contacts adapted to the lamps used and the supply voltage can be used.

It is not required to use protective elements in the form of diodes connected in parallel to the relay coils. This protection is built into the controller.

## 5. Operating mode

### 5.1. Description of the controller's operation

After turning on the controller's power supply, it automatically switches to OPERATING MODE. After pressing any button of the programmed remote control or triggering the control input, the controller function assigned in the program options will be performed. Additionally, the current operating status of the controller is displayed on the LED display. Possible display indications in the operating mode are shown in table 1. In the operating mode, the right dot on the display remains lit for each indication. This distinguishes the display from the PROGRAMMING MODE, when the dot is off. If there is currently no status to display, then only the dot remains lit. In the operating mode, the current status is signaled using the signaling output (Table 4).

### 5.2. Actuators with built-in limit switches, synchronization of gate leaves

The way the controller operates depends to some extent on the presence or absence of internal limit switches in the actuators. The difference in operation lies in the different behavior of the controller when an actuator overload is detected. The operation of actuators with built-in limit switches is activated manually from the menu ('LS' option), and they are automatically detected during the self-learning procedure.

- ▶ When the operation of actuators equipped with internal limit switches is enabled, detection of overload of one of the actuators causes both gate leaves to stop.
- ▶ When the actuators are not equipped with internal limit switches and their operation is disabled, detection of an actuator overload causes it to stop, but the other actuator continues to operate. This behavior of the controller ensures that the actuators are turned off when the gate leaves reach the bumpers. In such a case, it is possible that the gate leaves may become unsynchronized, which may be important if the order in which the gate leaves are closed is important (one of the leaves has a leaf). It then becomes necessary to re-synchronize the gate leaves, which should be done as follows:
  - trigger the OPENING movement,
  - wait until both gate leaves are fully open (it may be necessary to first activate the CLOSE direction and then OPEN).

### 5.3. Temporary deactivation of the auto closing and auto photo closing functions

This function allows you to temporarily deactivate the auto-closing and auto-photo-closing functions, which is useful when you need to leave the gate open for a longer time, despite the above functions being enabled.

- ▶ When the auto-closing function is enabled in the controller program options, it is possible to suspend its operation in the following way:
  - When you have finished opening both leaves (maximum opening), press the STOP or STEP BY STEP button. The signal lamp will go off and the auto-closing function will be inactive until the next movement is initiated.
- ▶ When the auto photo closing function is enabled in the controller program options, it can be suspended in the following way:
  - After completing the opening of both leaves (maximum opening), activate and release the photocell
  - press the STOP or STEP BY STEP button.

The signal lamp will turn off and the auto-closing function will be inactive until the next movement is initiated.









From firmware version 5.4, deactivation is possible by stopping the gate in any place, with the bA option enabled (Table 2).

## 6. Remotely entering a new remote control

The VARIA controller has a program that allows the user to easily enter a new remote control without having to access the controller buttons. This function is only useful if you have a remote control already programmed into the controller. To enter a new remote control in this way, follow the table below. The possibilities described above are related to the presence of the bc option in the driver program menu. Enabling it allows you to block a specific remote control from using its buttons to simply enter a new remote control.

display indication	ongoing operation or state
0 t.	The actuator(s) are moving in the OPEN direction.
2a .	The actuator(s) are moving in the CLOSING direction.
PA.	There is a PAUSE (time to stop the gate due to its inertia), after which the next operation will take place.
Fu .	Actuator 1 is opening - WICKET function.
F1 .	F1 photocell broken (PHOTO 1 input). This state will not be displayed despite the photocell being violated, if it is disabled in the program options, i.e. no reaction is set both during opening and closing, and the auto-photo closing and photo-test functions are disabled. If at least one of the above settings is different, the violation status will be shown.
F2 .	F2 photocell broken (PHOTO 2 input). This state will not be displayed despite the photocell being violated, if it is disabled in the program options, i.e. no reaction is set both during opening and closing, and the auto-photo closing and phototest functions are disabled. If at least one of the above settings is different, the violation status will be shown.
σ1.	Flashing display. It means that actuator 1 has been automatically stopped due to its overload. The indication will remain until the next operation is performed.
σ2.	Flashing display. It means that actuator 2 has been automatically stopped due to overload. The indication will remain until the next operation is performed.
P1, 0,01	Display after using the radio transmitter. The display takes place in three phases: phase 1: displaying the number of the pressed remote control button (P1...4) phase 2: displaying the hundreds digit of the serial number of the remote control used phase 3: displaying the tens and units digits of the serial number of the remote control used The example below shows the use of the P1 button of the remote control no. 001. This indication has the highest priority, i.e. it can interrupt all other indications.

Tab.1 Explanation of LED display indications in the controller OPERATING MODE.

no.	activities	description of activities performed
1	 radio range	You must be within the radio range of the receiver to which you want to enter a new remote control. Maintain a minimum distance of 1 m from the receiver. The receiver must be in OPERATING MODE (mode immediately after turning on the power)
2	 button of the remote control already entered	Keep button number 2 of the remote control already entered into the receiver pressed for 15 seconds. The button cannot be released even for a moment. This remote control must have the bc option disabled in the receiver program.
3	 >15s	When the time is up, release the button.
4	 < 3s	Then proceed to step 5, but in no longer than 3 seconds.
5	 new remote button	Keep button number 2 of the new remote control pressed for 15 seconds. The button cannot be released even for a moment. When the time is up, release the button.
6	 > 15s	
7	 remote control has been entered	A new remote control with the next serial number has been added to the receiver. Its configuration was copied from the configuration of the remote control used for entry (remote control used in step 2).
8	 remote control has not been entered	If the remote control has not been added, it may mean that: - the above conditions have not been met; - there were too many disruptions when adding; - the battery of one of the remote controls is exhausted and cannot withstand a long transmission. Repeat the operation from step 1.

Tab.2 Remote control entry procedure using only remote control buttons.

### CAUTION!

The ability to add a remote control without access to the controller radically reduces the degree of protection against third parties. Remote controls with the bc option disabled should be protected against access by third parties who can easily add their own remote control.



## 7. Programming the VARIA controller - PROGRAMMING MODE

Programming is done using the LED display and the NEXT and OK/Esc buttons located on the controller board (Fig. 1). The button described as NEXT is used to switch between options and edit individual operating parameters, and the button described as OK/Esc is used to confirm (short press) or go back in the menu option structure and to abandon the changes made (long press).

The controller program menu has a tree structure consisting of main and subordinate options (sub-options). An explanation of each option is provided in Table 3.

3-digit indications (remote number, times, PIN code, etc.) are displayed in two phases. The hundreds digit is displayed as a single-digit display, while the tens and units digits are displayed side by side simultaneously (two-digit display: tens digit and units digit from the left, respectively), switching between display phases is performed automatically.

### 7.1. How to navigate through menu options

- Navigate through the main options using the NEXT button (the first press enters the PROGRAMMING MODE, each subsequent press moves to the next option, from the last option (PF) you go to the first option (PP),
- We enter the sub-options from the main option by pressing the OK/Esc button,
- We move through the sub-options by pressing the NEXT button (just like the main options),
- To edit the parameter of a given sub-option, enter it with the OK/Esc button (as when entering from the main option to a sub-option),
- Setting numerical parameters (times, numbers, PIN code, etc.) is done by pressing or pressing and holding the NEXT button, but only increasing the value is possible; if you want to set a lower value than the currently displayed one, increase it until it will move to the value 000 and then continue setting until the desired value is obtained. Pressing and holding the NEXT button while setting a numerical value causes the indication to increase faster after some time. For better orientation when setting a numerical value, after reaching a multiple of 100 and after reaching the maximum value, changes to the set parameter are temporarily suspended and the hundreds digit is displayed, after which the tens and ones display returns and the value increase continues. After setting the desired value, confirm by briefly pressing OK/Esc, or withdraw the changes made by pressing and holding the OK/Esc button (then the value from before editing will return and you will automatically return to the display level of the given option or sub-option).
- Changes to non-numerical parameters (on/of, photocell operating modes, etc.) are made by pressing the NEXT button and confirmed by briefly pressing the OK/Esc button, or withdrawing the change by pressing and holding the OK/Esc button.
- Pressing and holding the OK/Esc button while in the main menu exits the PROGRAMMING MODE to the OPERATING MODE.

### REMARKS:

1. The PP option allows you to enter the remote control into the controller's memory and edit its settings. To enter the remote control, after selecting and confirming the PP option (display '-3'), press the remote control button that is to be entered three times and confirm by pressing OK/Esc. The serial number assigned to a given remote control will be displayed. You need to confirm again, then the options for editing the remote control will become available. Proceed similarly if you want to edit the settings of an already entered remote control. The remote control memorized by default has the following button settings: P1 - opening, P2 - closing, P3 - step-by-step function, P4 - stop. If you want to edit the settings of a remote control that you do not currently have, press the OK/Esc button again when the display shows '-3', and then use the NEXT button to set the serial number of the remote control whose parameters are to be changed and confirm.

#### Editing remote control settings includes:

- copying remote control settings from remote control no. 001. Enables quick configuration of remote controls, after previously setting the parameters for the remote control with serial number 001. After entering or declaring another remote control for editing, going through the CP option will assign its buttons the same functions as those set for the remote control No. 001, as well as the possible activation of the remote copy lock (bc) if it has been enabled in the remote control No. 001.
- assigning functions to the remote control buttons (closing, opening, stop, step by step, gate, additional exit, no function).
  - The STEP BY STEP function changes the actuator movement in the following sequence: OPEN - STOP - CLOSE - STOP. In the event of automatic stop of the actuator (e.g. activation of the limit



- switch), the STOP step will be skipped the next time the STEP BY STEP button is used.
- The GATE function activates actuator 1 in the opening direction until it is fully open.
  - enabling/disabling the lock for remote registration of the remote control. This is a function that prevents a given remote control from participating in the process of remotely adding a new remote control. If the function of remotely adding a remote control is to be blocked for all remote

main option	suboption	setting	description	comments	
PP		CPA3-A2-A1	Copying remote control button settings, from remote control no. 001	1	
		P1	Assigning one of the 6 functions to the P1... P4 button. Available functions: OPEN (Ot), CLOSE (CLOSE), STOP (St), STEP BY STEP (3F), WICKED (FU), ADDITIONAL CHANNEL (OU), no assignment ( _ ).		
		p2			0 t, 2a , 5 t,
		P3			3f , fu , ou ,
		P4			—
		bc	o n, o F		Enables (on) or disables (oF) the remote control entry lock (for a single remote control)
UPA3-A2-A1		Deletes the remote control from the controller memory			
d t	—	00 .....10	Delay time in sec. closing or opening one gate leaf relative to the other. After entering the options, the current setting is shown. They can be edited.	2	
a2	—	000 .....255	Actuator auto-closing time in sec. After entering the options, the currently set time is shown. It can be edited. If the time is set to 000, the automatic closing function is disabled. The auto-closing time is counted from the moment the actuator is stopped and each violation of the photocell (if active) causes the time to be counted again. While the auto-closing time is counting down, the signal lamp lights up continuously. The auto-closing function can be deactivated by pressing the remote control button or manual control STEP BY STEP or STOP when the gate is in the maximum open position. Each subsequent initiation of the gate movement activates the auto-closing function again.		
b R	—	o n, o F	Setting the controller's behavior after stopping. Blocks (bA=on) or not (bA=oF) the calculation of the auto-closing and photo-closing time after stopping the gate using the manual control button or remote control with the STOP function. If bA=on, the gate will not close after stopping despite the automatic closing function.		
f1 f2		0 t 2a	<p>Controller reaction to photocell violation:</p> <ul style="list-style-type: none"> <li>- continuation of movement after releasing the photocell (what),</li> <li>- immediate reversal of the direction of movement (rE),</li> <li>- unconditional gate stop (St).</li> <li>- no reaction ( _ _ )</li> </ul> <p>The settings must be entered separately for the OPENING (Ot) and CLOSE (CLOSE) directions, and separately for the F1 photocell input (PHOTO 1 input) and the F2 photocell input (PHOTO 2 input).</p>	3	
	af	000 .....255	Czas auto-foto zamykania siłownika w sek. Po wejściu do opcji pokazywany jest aktualnie ustawiony czas. Można go edytować. Jeśli czas ustawiony jest na wartość 000, wówczas funkcja automatycznego zamykania po przecięciu i zwolnieniu fotokomórki jest wyłączona. Każde kolejne naruszenie fotokomórki powoduje wstrzymanie liczenia czasu, a jej zwolnienie liczenie czasu od nowa.	4	
	F t	o n, o F	Enables (on) or disables (oF) the photocell testing function before each gate movement.	5	
	b R	o n, o F	Setting the controller's behavior after stopping. Blocks (bA=on) or not (bA=oF) the calculation of the auto-closing and photo-closing time after stopping the gate by violating the photocell operating in STOP mode. If bA=on, the gate will not close after stopping despite the automatic closing function.		

Tab.3 Controller program options

main option	suboption	setting	description	comments
La	—	os, s1, s2, S3	Operating mode of the signaling output. You can set one of four modes: - signaling (S1, S2, S3): visualization of the controller status - lighting (OS): lighting control	6
o1 o2	—	000 .....255	Setting the overload threshold of the first actuator ('o1') and the second actuator ('o2'). If the value 000 is set, then overload protection is disabled. The overload threshold is set in steps from 1 to 255. Use the auto-learning function (An option) for the controller to automatically set the initial value of the overload threshold, it will correspond to approximately 150% of the actuator operating current. The set value must then be fine-tuned by carrying out tests (see notes and section 8 'Acceptance tests').	7
_1 _2	—	00 ..... 30	Electronic power regulation of the first actuator ('_1') and the second actuator ('_2'). The power is set in steps from 1 to 30. The value 30 determines the maximum power of the actuator.	8
oP	—	ot, f u	Defines the operation of the manual control input OPEN. The 'ot' setting forces the input to operate in the OPEN mode, the 'Fu' setting forces the input to operate in the WICKET mode.	
ho	—	on, oF	Turns on (on) or turns off (oF) the function of initial opening of the gate with increased force in order to overcome greater resistance in the initial phase of actuator operation.	
Hc	—	on, oF	Enables (on) or disables (oF) the function of closing the gate with increased force in order to overcome greater resistance in the final phase of the actuators' operation (e.g. closing the electric lock).	
LS	—	on, oF	Enables (on) or disables (oF) the operation of actuators with built-in limit switches.	
LP	—	000 .....700	Displays the number of remote controls currently programmed in memory.	
bc	—	on, oF	Enables (on) or disables (oF) the lock for remote remote control entry (for all remote controls, including those that will be entered in the future).	9
2p	—	on, oF	Enables (on) or disables (oF) the double press function. This function protects against turning on the actuator by accidentally pressing the remote control button. If the function is enabled, each press of the remote control button must be repeated for no longer than 3 seconds. The function does not apply to the remote control button that stops the actuator.	
bd	—	on, oF	Enables (on) or disables (oF) the access lock to the program menu. If the lock is enabled, you must enter a 3-digit PIN code before each entry to the menu. This code is set in this option after selecting 'on'. The code must be entered twice. The value that can be set is 001...999. The combination 000 is not allowed.	10
5e	Pb	000 .....255	Shows the current gate mileage in thousands of cycles. All actuator movements initiated from the maximum closed position until returning to the fully closed position are treated as one cycle.	
	Pd	000 .....255	You can set the limit number of operating cycles (in thousands), after which the need to perform a technical inspection will be signaled. If the value is set to 000, the service function is disabled.	11
Rn	—	A3-A2-A1	Auto learning mode. After entering this mode, the controller performs 1 work cycle, measuring the closing and opening time and the actuator operating current, as well as checking the number of installed photocells. Based on this information, it automatically sets basic operating parameters. During the procedure, it is necessary to manually control its course.	12

Tab.3 (cont.) Controller program options



main option	suboption	setting	description	com-ments
n [	—	A3-A2-A1	Auto learning mode - times only. After entering this mode, the controller performs 1 work cycle, measuring the closing and opening time, leaving unchanged: actuator overload thresholds, number and configuration of installed photocells. During the procedure, it is necessary to manually control its course.	12
OU	—	000 .....255	Additional output settings, controlled by remote control. Setting the value '000' causes the output to operate in bistable mode (change of relay state after each pressing of the appropriate remote control button), any other value means the activation time in sec. (operation in monostable mode)	
EI	—	12/24	It allows you to set the supply voltage of the electric strike, connected to terminal number 14, to 12VDC or 24VDC.	
pf	—	A3-A2-A1	Formatting the controller memory. After confirmation, this process is irreversible and deletes all previously programmed remote controls from the controller's memory and restores all controller functions and parameters to the factory settings.	13

**Tab.3** (cont.) Controller program options

controls, including those that will be added in the future, use the 'bc' option in the main menu (note 9).

- deleting the remote control from memory. The serial number previously occupied by him will be released. The numbering of the remaining pilots will not change. The position freed by removing the remote control will be used when adding subsequent remote controls.

2. If it is necessary to delay the movement of one of the gate leaves, this option sets the delay time (0...10 sec.). During OPENING, the movement of actuator 2 is delayed and during CLOSING, the movement of actuator 1 is delayed. The movement delay occurs only when the leaf is in the final closing or opening position. The delay during OPENING is max. 3 seconds, even though the 'dt' parameter is set to a higher value.

3. The controller's reaction to the violation of photocell barriers should be defined separately for the closing and opening directions. Photocells F1 (PHOTO 1) and F2 (PHOTO 2) have separate settings, i.e. each barrier can operate in a different way. Despite the great flexibility offered by such a solution, all possible situations and the behavior of photocells when they occur should be thoroughly analyzed. This applies especially to situations when both pairs of photocells are working. Possible photocell operating modes:

- unconditional actuator stop ('St'),
- continuation of actuator movement after releasing the photocell ('co'),
- immediate reversal of the actuator's direction of movement (taking into account the pause time) ('rE'),
- no response from the controller ('\_\_'),

The photocell connected to the PHOTO 1 input is dedicated as external (located outside the property) and PHOTO 2 as internal (located inside the property). This is important when using the 'Automatic learning' function. During 'Automatic learning', if photocell F1 (PHOTO 1) is detected, the photocell is set to STOP mode when closing and NO REACTION when opening. When photocell F2 (PHOTO 2) is detected, the photocell is set to STOP mode when opening and CONTINUE when closing. In the case of a sliding gate, when one pair of photocells is installed, the PHOTO 1 input should be used. If the sliding gate overlaps the gate when opening, the second pair of photocells (PHOTO 2 input) can be used to protect the gate. In this case, after completing 'Automatic learning', you can change the opening photocell F2 to STOP to ensure an even greater degree of safety. Such settings, with proper installation of the gate and photocells, provide a high level of security while ensuring good functionality. However, the functional values can be increased by carefully modifying the photocell settings (e.g. using the option of reversing the gate movement).

Before making any modifications to the photocell operation settings, carefully analyze all possible situations that may occur in a given case, in particular:

- behavior of the gate at the entrance from both sides, both when opening and closing,
- safety of people passing through the gate, in the case of a sliding gate overlapping the gate.

4. The auto-photo closing function is turned on/off separately for photocells F1 (PHOTO1) and F2 (PHOTO2). The function operates by automatically starting to close the actuator after a set time, which is counted from the moment the photocell beam is released (entering or leaving the photocell barrier). If an obstacle reappears in the path of the photocell barrier, the time counting is stopped until the line is clear, at which time the time is reset to zero and starts again. Each time you press any of the manual control buttons or the remote control, the auto-photo closing function is interrupted.

5. The photo-test function is turned on/off separately for photocells F1 (PHOTO1) and F2 (PHOTO2). It works by testing the photocell barrier just before the actuator starts moving. This function prevents the actuator from starting if the photocell fails, which could lead to a dangerous situation. Barrier testing is only performed just before the actuator begins to move, never while it is at rest. Enabling the photo-test function does not cause any disturbances in the controller's operation if the photocell is repeatedly disturbed in the idle state (e.g. by animals or children playing). The photo-test will not be performed if the actuator movement is the result of switching the direction as a result of setting the actuator movement reversal function ('rE') for photocell F1 or F2.

6. The signaling output can operate in one of four modes:

- signaling 'S1' - The lamp connected to the signaling output pulsates in a specific way, depending on the controller's status. The states and their signaling methods are included in tab. 4.
- 'S2' signaling - As in the case of the 'S1' setting, additionally signaling an open gate.
- signaling 'S3' - Designed for lamps with a built-in pulser. The controller provides a continuous signal.
- lighting 'oS' - The lamp connected to the signaling output turns on and glows continuously when the actuator starts moving. The lamp stays on for another 4 minutes. after the actuator has stopped. Additionally, it can be turned on/off using the manual STOP button or the remote control button with the programmed STOP function, but only after the actuator has stopped. An exceptional case when the signaling output works slightly differently than described in this point is when the programmed number of gate operation cycles is exceeded (when the service function - SE is enabled) - see note 11.

7. The overload protection function is used to immediately turn off the actuator if increased current consumption is detected (which may be caused by an obstacle in the gate's path). If the actuators are equipped with internal limit switches, the controller will stop both actuators if overload of at least one of them is detected. If the actuators do not contain internal limit switches, only the overloaded actuator is stopped in the event of an overload. This may lead to the gate being out of sync, which may be important when the leaves overlap. In such a case, you should synchronize the gateway according to chapter 5.2.

### CAUTION!

**Correct setting of the overload protection activation threshold does not relieve the need to set the appropriate actuator power. Each time the actuator power is changed, it is necessary to re-set the overload protection threshold 'o1' and 'o2'.**

Setting the appropriate threshold for overload protection is crucial for reliable and safe operation of the automation. To initially select the overload protection threshold, use the 'An' auto-learning function. When using this function, the controller will automatically set the actuator shutdown threshold to 150% of the operating current. The overload threshold, separate for each actuator, 'o1', 'o2', is set in steps and can theoretically range from 001 to 255. Setting the parameter to '000' means overload protection is disabled. If the traction force of the actuators changes, it is necessary to re-set the overload protection thresholds 'o1' and 'o2', preferably by using the 'An' auto-learning option.

### CAUTION!

**It is always necessary to practically verify the set overload protection threshold 'o1' and 'o2', described in chapter 8.**

\* Signaling of stopping the actuator in the unclosed position will not be performed if there are no internal limit switches and the gate leaves stop due to overload during CLOSING. This solution protects against continuous pulsing of the signal even after closing the gate, if the actuator does not contain internal limit switches and the controller is based on detecting overload in the end positions of the actuators (resistance of the bumpers).

8. The controller allows you to change the power supply voltage of the actuators, which allows you to adjust their power, which is set in steps from 1 to 30. The regulation is performed separately for both actuators. The value 30 corresponds to the maximum power of the actuator.

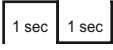

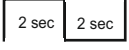
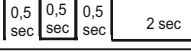
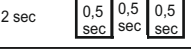
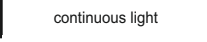


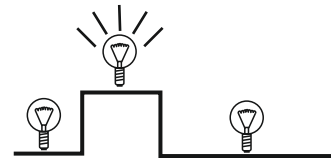
### CAUTION!

After each change in the actuator supply voltage, the overload protection function parameters 'o1' and 'o2' must be re-set, if this function is enabled.

### CAUTION!

Reducing the operating power of the actuators has a positive effect on safety conditions as well as the life of the mechanical elements of the installation. Actuators powered by reduced voltage have a lower pulling force, which effectively reduces the stresses arising after closing or opening the gate leaf. A smaller force will act on any obstacle appearing in the gate's path (very important for protection against crushing).

SIGNALING	STATE
	OPENING
	CLOSING
	STOP (only when setting LA= 'S2') *
	PHOTO TEST FAILED (photocell failure or violation during photo test)
	NO. OF DOOR OPERATION CYCLES EXCEEDED, TECHNICAL INSPECTION NECESSARY
	CONTROLLER IN PROGRAMMING MODE or active auto-closing or auto-photo-closing



Tab.4. Operation of the signaling output in the 'S1' and 'S2' signaling mode.

9. This is a blockade for remotely adding remote controls, preventing all remote controls, both those already added and those that will be added in the future, from participating in the process of remotely adding a new remote control. If the remote registration function is to be blocked only for some remote controls, use the 'bc' sub-option in the PP option (note 1).

10. The function of blocking access to the controller's menu protects against unauthorized persons' interference in the controller's settings, and in combination with the blockade of remote adding of the remote control ('bc'), also against such a person adding his own remote control. However, please remember that if you turn on the access lock and forget the PIN code, the only way to gain access to the controller menu will be to replace the EEPROM memory chip or to modify its content accordingly by the manufacturer.

#### Procedure for enabling access lock (setting the PIN code):

- use the NEXT button to select the 'bd' option from the main menu and confirm with the OK/Esc button,
- use the NEXT button to set its parameter to 'on' and confirm with the OK/Esc button,
- use the NEXT button (by pressing repeatedly or pressing and holding) to set the PIN code. The values that can be set are '001'...'999'. Confirm with the OK/Esc button,
- with the 'on' display flashing, press the OK/Esc button again,
- use the NEXT button to set the identical PIN code again and confirm with the OK/Esc button,
- when 'A3' is displayed, press the OK/Esc button 3 times,
- to exit the program menu, press and hold the OK.../Esc button,

If the re-entered code is not identical, or the code consists of only 0s (forbidden combination), then an error message will be displayed ('bd', 'Er' will be displayed alternately).

#### Procedure for disabling access lock:

- use the NEXT button to select the 'bd' option from the main menu and confirm with the OK/Esc button,
- use the NEXT button to set its parameter to 'oF' and confirm with the OK/Esc button,
- when 'A3' is displayed, press the OK/Esc button 3 times,
- To exit the program menu, press and hold the OK/Esc button



11. After exceeding the set number of gate operation cycles 'Pd' (the value is set in thousands of cycles), the signaling output will behave in a characteristic way, i.e.

- if the signaling output works in the signaling mode (LA = 'S1' or 'S2'), then it will pulsate in a manner characteristic of the service mode (see table 4), regardless of the current controller status. When the actuator is fully closed, the output will be turned off.
- if the signaling output works in the lighting mode (LA = 'oS'), then the lamp connected to this output will turn off immediately after the actuator stops (during normal operation, it remains lit for 4 minutes). Moreover, an attempt to turn on the lighting using the STOP button will turn on the lighting only for 0.5 sec.

This somewhat cumbersome way of operating the signaling output is intended to force the user to call the service, which will carry out a technical inspection of the automation and restore the standard operation of the signaling output.

Restoring the standard operation of the signaling output:

- increase the set value of the 'Pd' parameter in the SE option by the value corresponding to the number of thousands of gate operation cycles, after which the next inspection is to take place,
- or if necessary, disable this function by setting the value '000' for the 'Pd' parameter,
- or format the controller memory, which, apart from restoring the standard operation of the signaling output, will also delete all remote controls from the controller memory and restore the factory configuration of the controller settings (note 13).

12. The 'An' and 'Nc' automatic learning modes greatly facilitate and speed up the process of programming the controller's operating parameters. The auto-learning function sets the following controller parameters:

- actuator closing time with 5 seconds to spare,
- actuator opening time with 5 seconds to spare,
- overload protection threshold ('o1' and 'o2') at 150% of the actuator operating current (only 'An'),
- F1 photocell operating mode (if detected): STOP when closing, NO REACTION when opening, auto-photo closing disabled, phototest disabled ('An' only),
- F2 photocell operating mode (if detected): STOP when closing, CONTINUE when opening, auto-photo closing disabled, phototest disabled ('An' only).

To properly perform the automatic learning procedure:

- ▶ make sure that the connected photocells work properly and that the internal limit switches of the actuators (if present) are correctly set or adjusted so as not to interfere with the operation of the actuator within the range of gate movement (see point 8.1, 'general remarks'),
- ▶ set the gate to the fully closed position (using the manual control buttons or the buttons of the programmed remote control), or disengage the actuators and close the gate manually, then re-engage them.
- ▶ make sure that there is no obstacle in the way of the photocell barriers and in the path of the gate movement,
- ▶ use the NEXT button to select the 'An' option from the main menu and confirm your selection with the OK/Esc button,
  - ▶ when '-3' is displayed, press the OK/Esc button three times,
  - ▶ when a 'running frame' appears on the display, the first pressed button on the remote control (also unprogrammed) or manual control button (except STOP) or OK/ESC, NEXT programming button will start the slow movement of the first leaf in the opening direction. From now on, only the button you just selected will be used in the learning procedure.
    - ▶ second press - leaf 1 accelerates to standard opening speed,
    - ▶ third press - leaf 1 is slowed down,
    - ▶ fourth press - leaf 1 is stopped,
    - ▶ fifth press - leaf 2 starts slow movement in the opening direction,
    - ▶ sixth press - leaf 2 accelerates to standard opening speed,
    - ▶ seventh press - wing 2 is slowed down,
    - ▶ eighth press - leaf 2 is stopped,
    - ▶ ninth press - leaf 2 starts slow movement in the closing direction,
    - ▶ tenth press - leaf 2 accelerates to standard closing speed,
    - ▶ eleventh press - wing 2 is slowed down,
    - ▶ twelfth press - leaf 2 is stopped,
    - ▶ thirteenth press - leaf 1 starts slow movement in the closing direction,

- ▶ fourteenth press - leaf 1 accelerates to standard closing speed,
- ▶ fifteenth press - wing 1 is slowed down,
- ▶ sixteenth press - leaf 1 stops and the indication 'A3' is displayed,
- ▶ press the Ok/Esc button three times to confirm the changes or press and hold the OK/Esc button to withdraw from the procedure and thus restore the previous settings of the controller parameters.

While automatic learning is in progress, a characteristic "running frame" sequence is displayed.

To set the deceleration time to zero, press the learn button again in less than 1 second while the actuator is in slow motion. Similarly, for the delay phase to be programmed, it must last at least 1 second.

### CAUTION!

**Violating the photocells during automatic learning will not stop the actuator! If necessary, the gate movement can be stopped using the STOP manual control button. This will also interrupt the auto-learning operation and restore all controller operating parameters to the values they had before initiating the auto-learning function. During the automatic learning procedure, do not violate the photocell barriers and ensure that the gate moves freely without any obstacles in its path.**

13. Factory settings after accepting the PF option:

- ▶ no remote controls entered into the controller,
- ▶ actuator opening and closing time 20 seconds, no slowdowns,
- ▶ delay time between actuators 2 seconds,
- ▶ auto-closing function disabled,
- ▶ F1 photocell input settings:
  - STOP (St) when CLOSING (CLOSE)
  - no reaction (\_\_) when OPENING (Ot)
  - auto-photo closing function disabled (AF = 000),
  - photo-test function disabled (Ft = 'oF'),
  - bA function disabled (bA = oF),
- ▶ F2 photocell input settings:
  - no reaction (\_\_) when CLOSING (CLOSE)
  - no reaction (\_\_) when OPENING (Ot),
  - auto-photo closing function disabled (AF = 000),
  - photo-test function disabled (Ft = 'oF'),
  - bA function disabled (bA = oF),
- ▶ the signal lamp output works in signaling mode (LA = 'S1'),
- ▶ overload protection disabled (O1 = '000', O2 = '000'),
- ▶ remote entry lock disabled (bc = 'oF'),
- ▶ double press function disabled (2P = 'oF'),
- ▶ menu access lock function disabled (bd = 'oF'),
- ▶ service function disabled (SE --> Pd = '000'),
- ▶ current gate mileage reset (SE --> Pb = '000'),
- ▶ actuator power set to 15 (\_1 = '15', \_2 = '15')
- ▶ pre-opening function disabled (HO = 'oF')
- ▶ closing function disabled (HC = 'oF')
- ▶ support for actuators with limit switches disabled (LS = 'oF')
- ▶ electric strike supply voltage 12VDC (EL = '12')
- ▶ the OPEN input works in the gate opening mode
- ▶ auto-closing and auto-photo-closing lock 'bA' disabled (bA = oF)

## 8. Acceptance tests

### 8.1. General remarks

After installing the controller and all associated devices, especially safety ones, final tests should be performed to check the entire automation. These tests should be performed by competent personnel who are aware of the existing hazards! Final tests are the most important phase in the implementation of automation. Individual components such as the motor, photocells, etc. may require specific inspections and it is therefore recommended to follow the inspection procedures contained in the instructions for the components concerned.



- ▶ If the actuators contain internal limit switches to interrupt the current circuit, make sure that at this stage they will not disconnect the actuator at an unexpected moment.
- ▶ If you decide not to install manual control buttons, remember to bridge the 'STOP' terminals. The lack of a bridge will prevent any movement of the actuators.
- ▶ if you decide not to install a photocell, you can bridge the PHOTO 1 and/or PHOTO 2 inputs with the COM terminal, or just disable all its functions in the controller menu (set no reaction '\_ \_' when opening 'Ot' and closing 'ZA' and disable auto-photo closing functions 'AF' = '000' and photo-test Ft = 'oF').

### **CAUTION!**

**Both gate leaves, both when opening and closing, should provide equal resistance to the actuators. The plane of the gate leaf should be located relative to the ground in such a way that when opening and closing the gate there is no variation in resistance due to the action of gravity (the gate is located on an inclined surface).**

## **8.2. The final tests involve the following stages**

### **8.2.1. Movement direction control**

Check whether when the OPENING function is activated, the automation physically moves in the opening direction. If the movement is in the closing direction or there is no movement at all, disconnect the controller's power supply and reverse the connection of the cables of the appropriate actuator to the OPEN and CLOSE terminals. Check again.

### **8.2.2. Programming the controller**

Set all desired controller operating parameters in the program menu. It is recommended to use the automatic learning function ('An' option in the controller menu), which will ensure the setting of appropriate closing and opening times of the actuators, pre-configure the photocell operating modes and set the overload protection activation threshold. After automatic learning, you can manually edit the desired parameters in the program menu.

### **8.2.3. Initial security check**

If photocells are installed, you must manually activate the F1 photocell, F1 should appear on the display. Do the same for photocell F2, if installed. Photocell F2 must first be activated in the program menu (if the auto-learning option is used, the presence of photocells will be automatically detected by the controller). In the idle state, when the optical barriers are intact, only the dot should be lit on the controller display. If the display shows 'F1' or 'F2' in this state, it indicates an error in the operation of the photocells (incorrect connection, failure to synchronize the transmitter with the receiver or photocell failure).

### **8.2.4. Control of actuator movement control functions**

- ▶ Check the STEP BY STEP function using the remote control button or hand button. After subsequent impulses from the button, the following sequence of actuator movements should be performed: opening - stop - closing - stop.
- ▶ Check the OPEN function using the remote control button or hand button. With the actuators fully or partially closed, give an impulse from the OPEN button - the actuators should move in the opening direction. If only leaf 1 moves, it is possible that the manual control input OPEN is programmed to the 'WARD' function (Table 3, page 12).
- ▶ Check the CLOSING function using the remote control button or manual button. With the actuators fully or partially open, give an impulse from the CLOSE button - the actuators should move in the closing direction.
- ▶ Check the STOP function using the remote control button or hand button. While the actuators are moving in the closing or opening direction, give an impulse from the STOP button - the actuator should stop.

### **8.2.5. Force setting**

Set the desired traction force of the actuators using the electronic power control of the actuators (see page 15). Appropriate setting of the actuator power is crucial for safety conditions as well as the durability of the mechanical elements of the installation. It is usually not necessary to operate the actuators at their rated power, it should be individually adjusted to the installation conditions (taking into account the weight and structure of the gate leaves, resistance, exposure to strong wind, etc.). Particular attention should be paid to the stresses occurring when the gate leaves are closed or opened, and the consequences of accidentally jamming an obstacle between the gate leaves should be anticipated. Please remember that the lower the parameter value, the smaller the forces that will act on any obstacle appearing in the path of the gate. When setting the operating power of the



actuators, you should be aware of the resistance of the gate leaves, as well as their instability over time (influence of weather conditions, wear of mechanical elements, etc.), therefore the set operating power cannot be too low, it must ensure safe guidance of the leaf throughout the entire range of gate movement.

### CAUTION!

**After each change in the operating power of the actuators, it is necessary to re-set the value of the overload protection threshold 'o1' and 'o2', preferably using the 'An' auto-learning function, and check the overload protection in accordance with point 8.2.6 of this chapter.**

#### 8.2.6. Overload protection check

If the overload protection function has been activated (by performing automatic learning 'An' or manually in the program menu), the gate should be closed and after approx. 1 sec. from the beginning of closing, physically block the movement of one of the gate leaves. This must be done safely and with increased caution. Evaluate the force needed to block the gate so that the controller automatically stops the gate movement. Do the same for the other leaf when closing. Repeat the process for the opening direction. If necessary, correct the set value in the 'o1', 'o2' options (reduce it if you had to use too much force to stop the gate, or increase it if the gate could be stopped too easily). After correcting the setting, perform the above test again. Please remember that in winter the gate may have greater resistance to the actuator, therefore the set overload value must be high enough to prevent the gate from stopping spontaneously. At the same time, remember about user safety and do not set the 'o1' and 'o2' parameters to too high values. The force necessary to block the gate, which will automatically turn off the actuator, must be small enough so that the gate does not pose a risk of bodily injury (especially to a child).

When using the automatic learning option, the controller will automatically set the overload parameter to 150% of the actuator's normal operating current, taking into account the highest measured operating current value. This value should be adjusted to individual conditions (type and power of the actuator, length of the leaves, etc.). If it is desired that a relatively small force stops the gate, you should try to set the actuator power as low as possible, using electronic regulation of the actuator power (see page 15). After each change in the operating power of the actuators, it is necessary to re-set the value of the overload protection threshold 'o1' and 'o2', preferably using the 'An' auto-learning function, and re-check the overload protection in accordance with the current point.

### CAUTION!

**If overload protection does not provide satisfactory results, other protection measures should be used (e.g. safety edges, additional photocells, etc.).**

#### 8.2.7. Adjustment of internal limit switches in actuators

If the actuators are equipped with internal limit switches that disconnect the actuator's current circuit, adjust their settings using the appropriate instructions and technical data sheets.









DTM System hereby declares that the device complies with Directive 2014/53/EU; 2014/30/EU; 2014/35 /EU; 2006/42/EC. The full text of the EU declaration of conformity is available at the internet address: [www.dtm.pl](http://www.dtm.pl)



The intention of the WEEE Directive (Directive 2002/96/EC on waste electrical and electronic equipment) is to reduce the amount of hazardous substances in waste. The underlying purpose is to promote the avoidance, recovery and risk-free disposal of waste.









**DTM System**

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