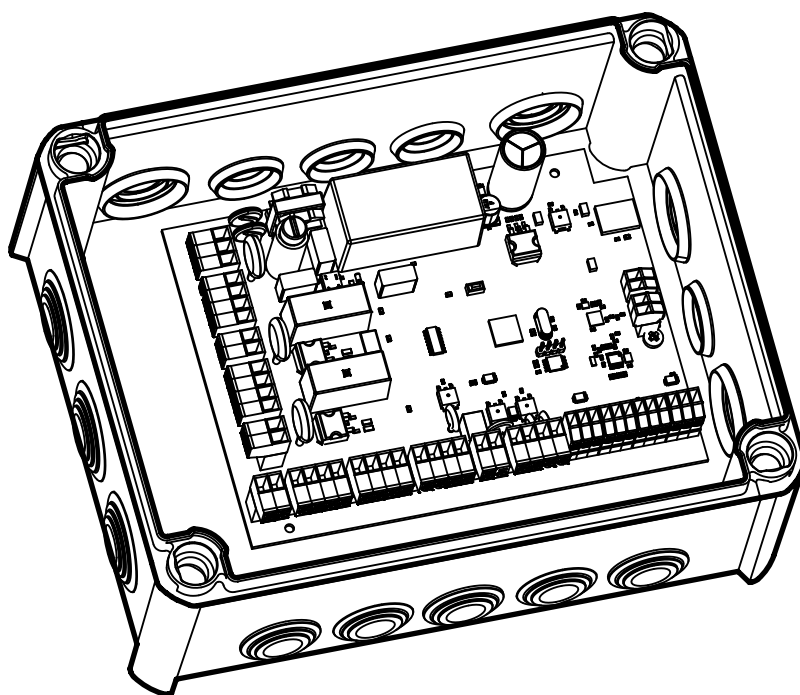


AUTOMATION SYSTEMS

DOUBLE-LEAF GATE CONTROLLER manual

BLUE 232

version 1.6



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1. Introduction

The BLUE 232 gate controller is used to control the drives of double-leaf gates, powered by alternating voltage 230V, 50Hz, with a power of max. 2 x 350W. It works with actuators equipped with limit switches or encoders. The driver configuration is done via the Blue Motor Control application for Android devices, available for download from the GooglePlay store. The application communicates with the controller via Bluetooth. The software has an intuitive interface, thanks to which the configuration is quick and efficient.

The controller has the function of slowing down the movement while stopping and regulating the power of the actuators. The control panel allows you to set automatic closing of the gate after a time and / or photo-closing (activated after the photocells are violated and released again). BLUE 232 has an output for a 12 / 24V DC gate bolt and an additional output controlled by a manual or radio button, which can work in bistable or monostable mode, intended for switching an external device. Radio control takes place via the DTM433MHz and DTM868MHz series transmitters.

2. Technical data

Basic parameters

• Power supply	230V AC, 50 Hz
• Standby power consumption	5W
• Operating temperature (min./max.)	-20°C / +55°C
• External dimensions of the casing (W x D x H)	240 x 120 x 190 mm
• Mounting method	surface-mounted housing
• Weight	1,1 kg
• IP	66

Outputs / inputs

• Actuator output (voltage / maximum power / built-in capacitor / quantity)	230VAC / 2 x 350W / none / 2
• Signal lamp output	OC max. 24VDC/6W
• Peripheral power supply output (photocells, lock, etc.)	24V DC, 0,5A
• Power output for photocell transmitters	OC type (see PHOTO-TEST function)
• Gate bolt output	12 / 24V DC, switched for 5 sec. when opening begins
• Additional output in bistable / monostable mode	relay (potential-free), max. 1A / 30V AC / DC
• Photocell inputs / quantity	programmable, NC type / 3
• Manual control input A, B, C	programmable, NO type
• Manual control STOP input	NC type
• Limit switches input	on opening and closing / NC type / 4
• Motor encoder input	digital / 2

Control part

• Adjustable opening and closing time / soft stop phases	1 - 120s / 0 - 15s with an accuracy of 1s
• Adjusting the power of the actuators	10-100 separately for the 1st and 2nd actuators, via the app
• Increasing the programmed power of actuators	yes, separately for each actuator 0-50%
• Second leaf delay adjustment	yes, time adjustable separately for opening and closing 0-60s
• Programming the controller operation	using Bluetooth application
• Gate auto-closing function	yes, time adjustable from 1 to 120s
• Photo-closing function	yes, time separately adjustable 0-120s
• Pushing with increased force after closing, start with increased force	programmable
• Preliminary operation of the signal lamp	programmable, 5s
• Photocell test (testing of photocells before door movement)	programmed separately for each photocell input
• User Interface	SW button, LED indicators, application for configuring the controller operating parameters via Bluetooth™
• Device configuration memory	non-volatile

Radio part

• Frequency	433MHz and 868MHz
• Antenna input impedance	50 Ω
• Antennas	wire, terminals for connecting external antennas
• Memory capacity	200 remotes, each with an individual number in memory
• Remote configuration	assigning the controller function to any remote control button
• Possibility to erase all memory	yes
• Possibility to delete a single remote control	yes
• Possibility to add a remote control without interfering with the controller	yes, the function of remote assigning the remote control / via Bluetooth™ Bluetooth™
• Blocking the remote assigning function	yes

3. Installation

3.1. An important reminder

Electrical installations and automation of the drive must be performed by experienced and qualified personnel in accordance with applicable legal regulations. There is a dangerous voltage of 230V / 50Hz in the device, all connections must be made with the voltage turned off. The BLUE 232 controller is classified in the category of "Automatic gates and doors" devices, requiring special care for safety considerations. The installer's task is to mount the system safely enough to minimize the risk of its use. Anyone who installs the device without complying with all applicable regulations is responsible for any damage that the device may cause.

3.2. Description of the device and installation method

The BLUE 232 controller includes a motherboard and a housing. The housing has four points for mounting it on a vertical surface [1] and cable glands on each side. The main board (fig. 2) should be screwed to points [2] in fig. 1. The controller is equipped with a Bluetooth communication system that functions as a user interface. The controller housing has an IP66 tightness degree. 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 "IP" tightness. The presence of the supply voltage is indicated by the POWER LED.

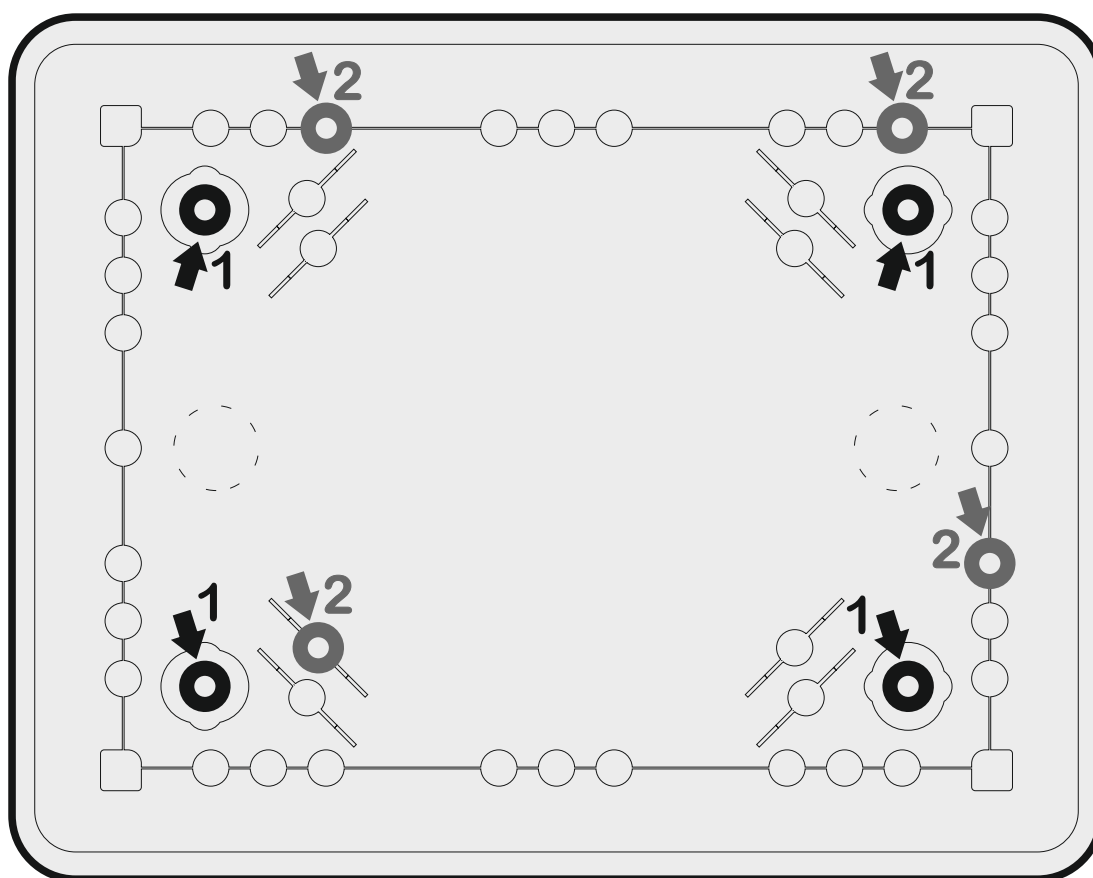


Figure 1. View of the controller housing, with the mounting locations for the housing [1] and the controller mounting locations [2] marked.

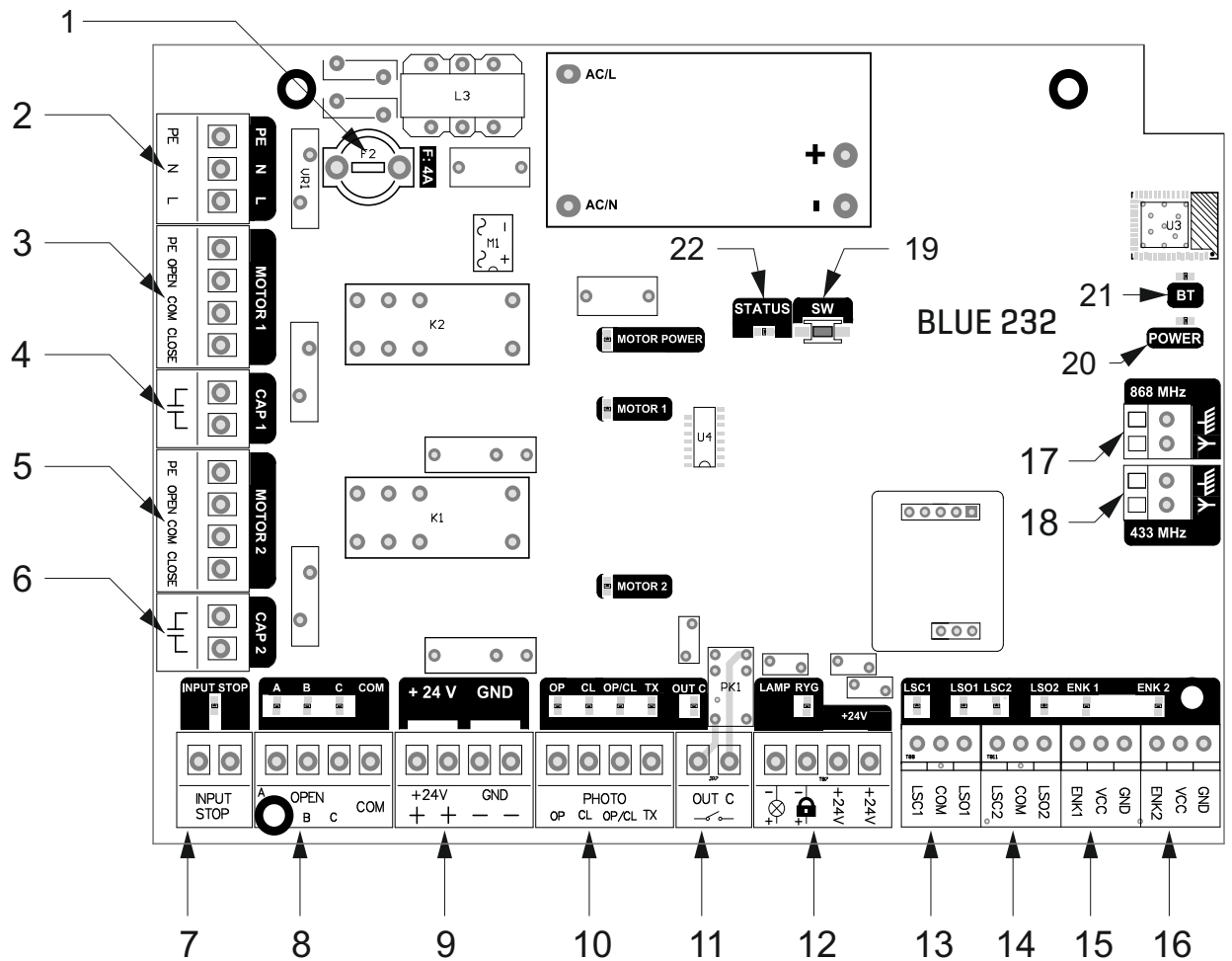
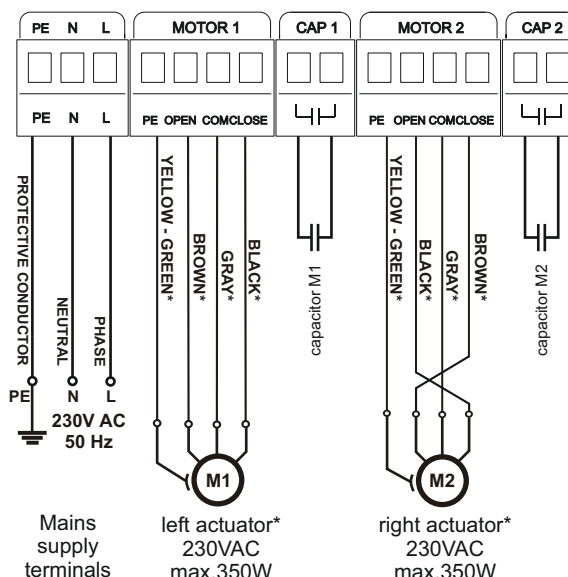


Figure 2. View of the controller motherboard with the most important elements marked.

- 1.time-delay fuse (4A / 250V, T)
2. connector for connecting 230V AC power
- 3.connector for connecting the motor 1
- 4.connector for connecting the motor capacitor 1
- 5.connector for connecting the motor 2
- 6.connection for motor capacitor 2
- 7.connector for connecting the STOP button (NC)
- 8.connector of manual control buttons A, B, C
9. +24 VDC / ground potential (GND) accessory power connector
10. connector for connecting the OP, CL and OP / CL photocell outputs and ground potential for the phototest function
- 11.additional relay output (NO)
12. LED lamp connector (ground potential max. 6W), gate lock output 12 / 24V DC, power supply + 24V
- 13.connection for connecting the limit switches of the actuator 1
- 14.connector for connecting the limit switches of the actuator 2
- 15.connector for connecting the encoder of the actuator 1
16. connector for connecting the encoder of the actuator 2
17. connector for connecting the 868MHz antenna
18. connector for connecting the 433MHz antenna
19. SW button used for Bluetooth communication and controller reset
20. LED diode indicating power supply to the controller
21. LED indicator of the operation of the Bluetooth communication module
22. LED indicating the operation of the controller

Figure 3. View of the terminals for connecting the controller power supply and connecting the motors with capacitors.



* referst to the DTM300/400/600 actuators

3.3. Description of the electrical connections of the BLUE 232 controller

Connection to the 230VAC electrical network may only be performed by a qualified specialist with appropriate authorizations. The delivered controller is immediately ready for operation. Connect all installed additional protection and control devices to the appropriate terminals in accordance with the connection diagrams.

3.3.1. Mains supply terminals 230VAC, 50Hz (L, N, PE)

This connector is intended to connect the controller power supply from the 230VAC, 50Hz mains. The power supply circuit to which the controller will be connected should be equipped with a switch that cuts off the power supply to the control board. As a standard, the phase conductor is connected to the L terminal, the neutral conductor to the N terminal, and the protective conductor (yellow-green) to the PE terminal.

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

The actuator that opens first (important when the leaves close "overlap") should be connected to the **MOTOR1** terminals. The second actuator should be connected to the **MOTOR2** terminals. Connect the actuator's opening wire to the **OPEN** terminal, the closing wire to the **CLOSE** terminal, the common wire to the **COM** terminal and the actuator's protective wire to the **PE** terminal.

3.3.3. Terminals for connection of CAP1 and CAP2 motor capacitors

Motor capacitors, appropriate for the given type of actuators, should be connected to **CAP1** and **CAP2** connectors.

3.3.4. Terminals for connecting a 24V / 6W signal lamp

Clamps are used to connect a 24V LED lamp with a maximum power of 6W. Connect it to the LAMP and + 24V terminals (fig. 2.). In the case of a lamp with a built-in interrupter, **turn off** the interrupter function in the controller.

3.3.5. Clamps for connecting the gate bolt ()

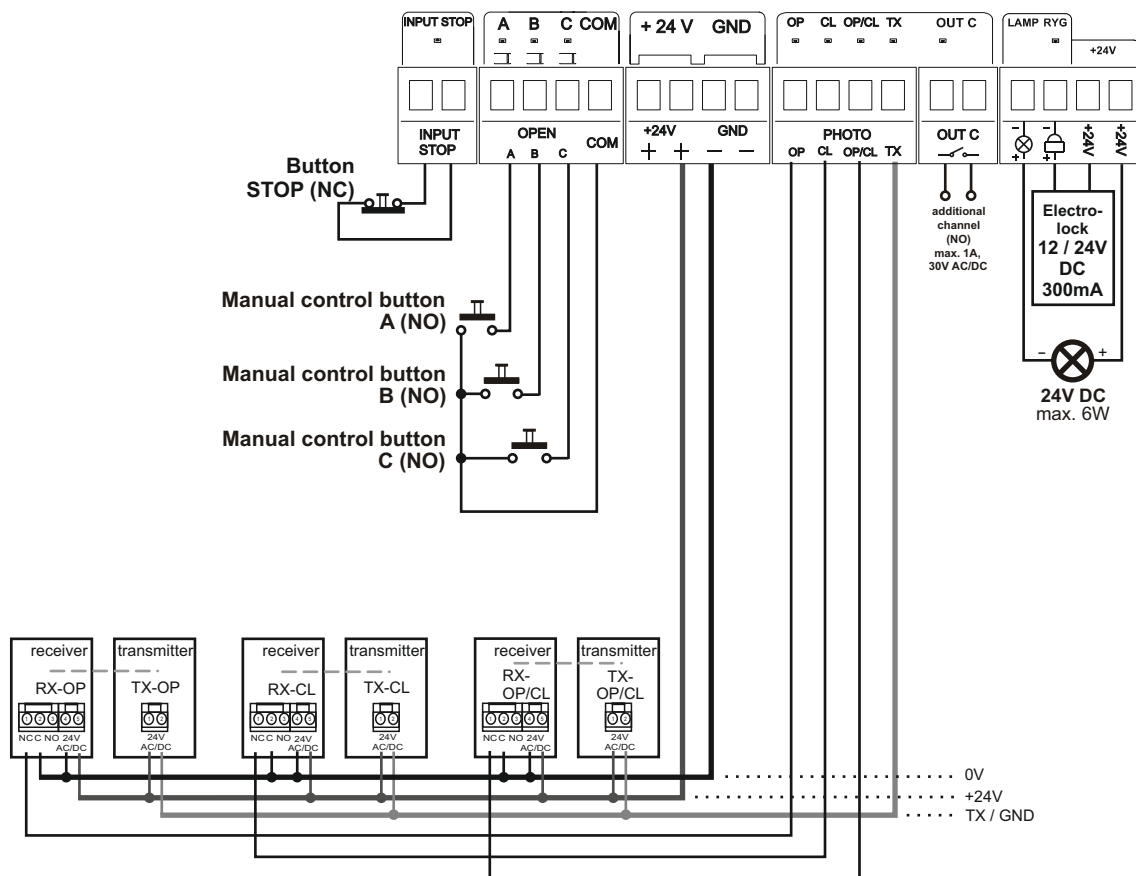
The controller is equipped with an output that can control the 12 / 24V DC gate bolt. Remember about the maximum load capacity of the accessory power output, 0.5A in total.

3.3.6. Additional output terminals (OUT C)

The controller is equipped with a relay with leaded NO contacts with a maximum load capacity of 30VAC / DC 1A, enabling the control of an additional device, such as an electrolock, additional controller, lighting (using an additional relay with an appropriate load capacity), etc. The output is switched on with the OPEN C manual control button or button on the remote control.

3.3.7. Accessory power supply terminals (+ 24VDC)

The controller has a 24VDC accessory power supply output, max. 0.5A. The output has two equal screw terminals with a ground potential (0V) and a potential of + 24V.



- unused photocell inputs should be turned off by software
- STOP input, if not used, it must be bridged with a wire
- NO terminals not used should be left unconnected.

Figure 4. Diagram of connecting accessories to the BLUE232 controller.

3.3.8. Clamps for connecting TX, PHOTO OP, PHOTO CL and PHOTO OP / CL photocells

If 24V photocells are used, with separate power supply for the transmitter and receiver, then connect the "+" power supply of the transmitter and receiver to the accessory power supply +24VDC, and "-" the transmitter power supply to the TX terminal (OC type), and powering the receiver to ground. If the photocells have a common power supply for the transmitter and receiver, then connect their power "-" to the TX output. This method of connection will allow you to use the PHOTO-TEST function, which checks the operation of the photocells before each gate movement and blocks the movement in the event of a failure. The PHOTO-TEST function significantly increases the level of security. The **PHOTO OP** input is dedicated to a photocell installed perpendicular to the entrance edge, it protects the area between the open leaf and an obstacle, e.g. a wall. The **PHOTO CL** input is dedicated to the external photocell (outside the property) mounted parallel to the entrance edge, the **PHOTO OP / CL** input is dedicated to the internal photocell (on the property), installed parallel to the entrance edge.

3.3.9. Manual control terminals INPUT STOP and A, B, C

The **NC** type safety button must be connected to the **INPUT STOP** terminals. If the button is not used, short-circuit the terminals with a wire.

Momentary **NO** type buttons can be connected to **A, B, C** terminals, which will control the drive operation in accordance with the program settings. Make the settings from the level of the Bluetooth application. All **unused NO** inputs should be **left unconnected**. The activation of the manual control button consists in its momentary pressing.

3.3.10 Terminals for connecting the limit switches of the M1 and M2 motors

The controller allows operating the limit switches built into the actuators. If present, it should be connected to the appropriate terminals LSO - open when opening, LSC - open when closing, COM - common terminal.

3.3.11 Terminals for connecting the encoders of motors M1 and M2

The controller allows operating the encoders built into the actuators. If present, it should be connected to the appropriate terminals "+", "-", "D" of the power supply and the data line "D".

3.3.12. 433MHz and 868MHz radio receiver

It allows to control the actuators by DTM433MHz and / or DTM868MHz remote controls. Add and manage remotes through a dedicated application with Bluetooth communication.

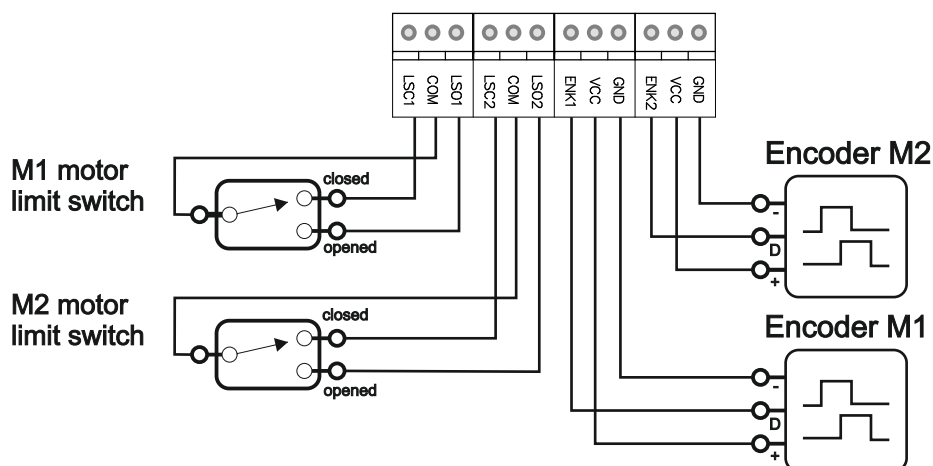


Figure 5. Connection diagram for additional limit switches and / or motor encoders.

CAUTION!

The control panel settings that are not adjusted 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 in order to adjust its operating parameters to the current installation, in particular:

- always adjust the power of the actuators
- always program the opening and closing times

The intended connections must be scrupulously observed. In case of uncertainty, do not try, but read the relevant detailed technical sheets of the installed devices. Incorrect connections may cause serious damage to the controller and other devices.

DO NOT CONNECT ADDITIONAL MOTORS PARALLELY



4. Description of the controller operation

After switching on the power supply of the controller, it is immediately ready for operation. When any button on a programmed remote control is pressed or a control input is triggered, the corresponding controller function will be performed. In the operating mode, the current state is indicated by the signaling output and LED diodes. Immediately after powering up the controller, the first move will be to **open**.

4.1. Synchronization of the gate leaves

When one of the actuators meets an obstacle that prevents its further movement, the other one does not stop. In this case, there is a possibility of the gate leaves getting out of sync, which may be important when the sequence of closing the gate leaves is important (one of the leaves has an overlap). Then it becomes necessary to re-synchronize the gate leaves, which should be done as follows:

- trigger the OPEN movement,
- wait until both leaves are fully opened (it may be necessary to first call the CLOSE direction and then OPEN direction).

5. Programming the BLUE 232 controller

The BLUE 232 controller is programmed to the needs of a given installation using a dedicated Blue Motor Control application for Android devices, communicating with the controller via Bluetooth™.

The **Blue Motor Control** app is available for download from the GooglePlay store.



In order to efficiently carry out the controller programming process, the following sequence should be observed:

- analyze the needs in relation to the functionality of the controller;
- establish communication between the controller and the application, see section 5.2;
- start Autolearn in the Blue Motor Control application;
- conduct learning by following the messages in the application;
- check the operation of the automation and possibly make additional changes and adjustments via the application.

5.1. SW button and LED STATUS

The SW button (see fig. 2, point 19) is used to restore the default settings of the controller. The STATUS diode is a status diode informing about the controller operation.

5.2. Pairing the controller with Bluetooth™ device.

In order to use the application to configure the device, it is necessary to pair the controller Bluetooth™ interface with the device from which the configuration will be carried out, eg a telephone.

5.2.1. Launching the Application and Bluetooth™ communication

Run the Blue Motor Control application and if Bluetooth was not previously turned on in the phone, let the application turn it on.

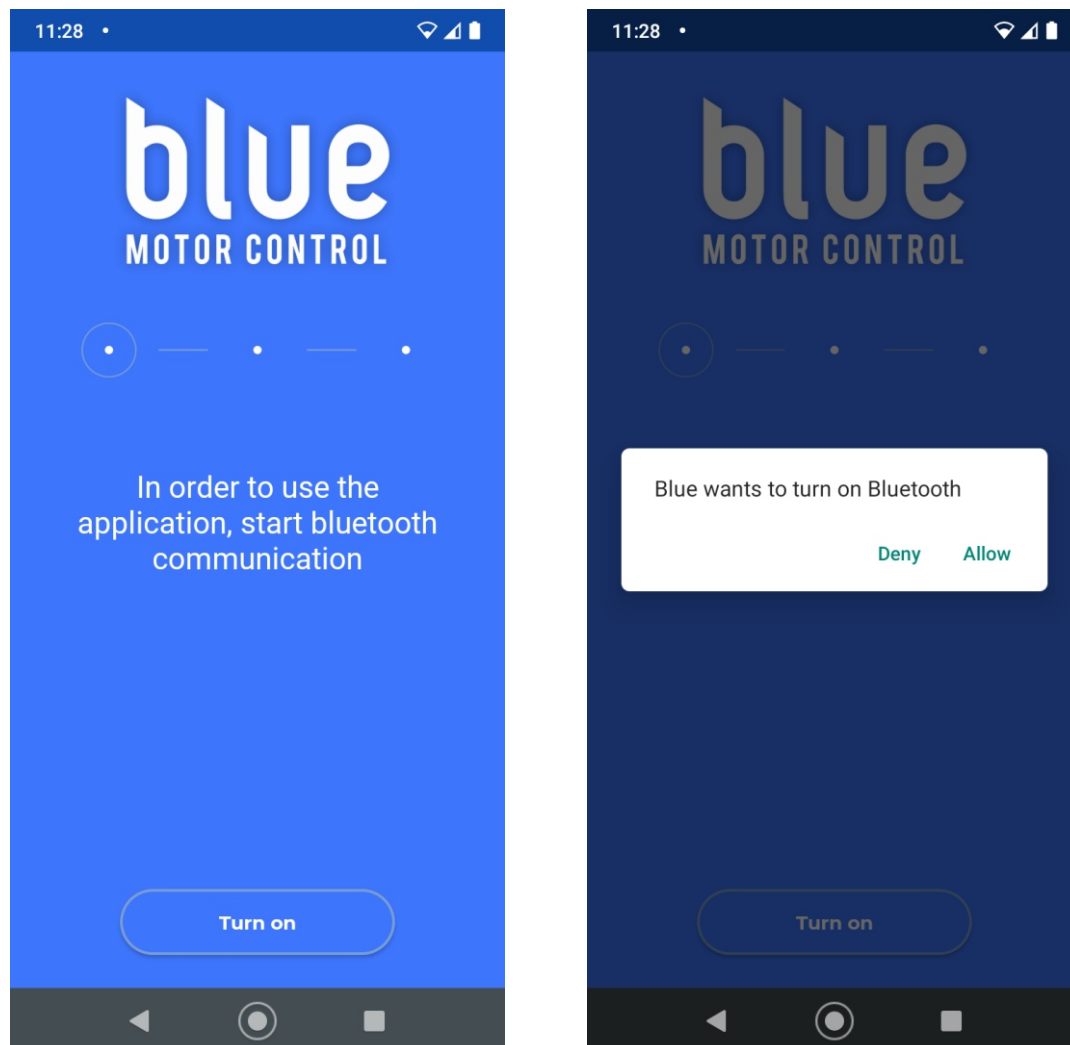


Figure 6. Enabling Bluetooth™ on the configuring device.



5.2.2. List of controllers

Run the application searching for available controllers within Bluetooth™ range. If more control panels are to be operated nearby, select the one you want to configure from the list.

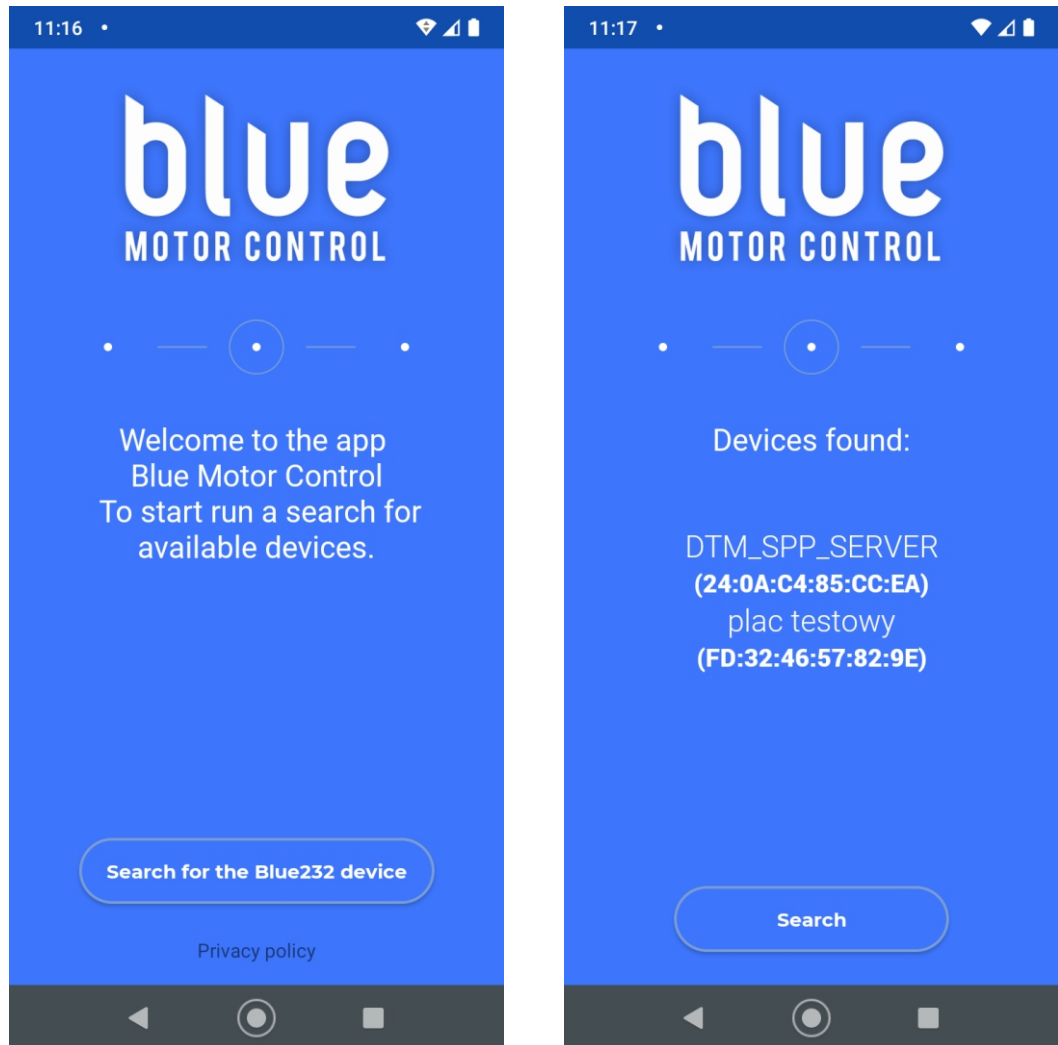


Figure 7. Search and select a controller from the list.

5.2.3. PIN code for the controller

If the application connects to the controller for the first time it will ask for a pin code (0000 by default).

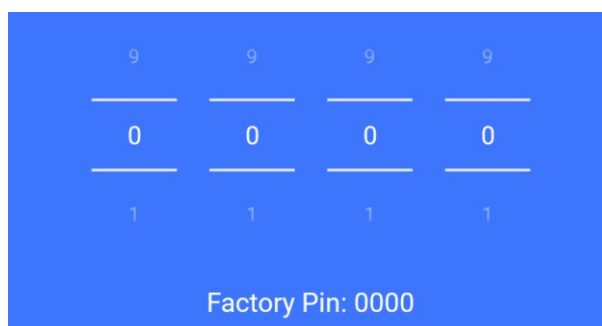
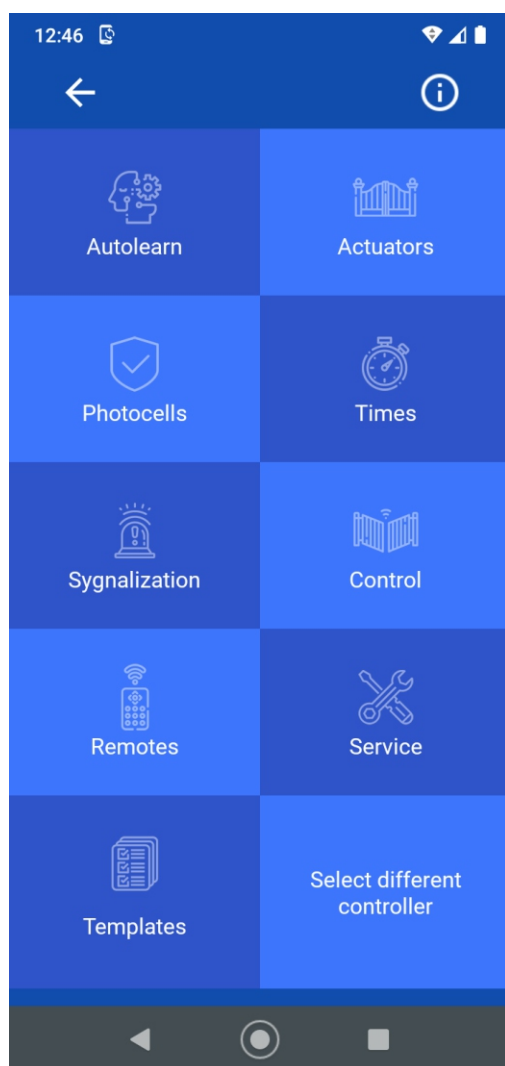


Figure 8. PIN code request on first startup.

5.2.4. View of the connected Blue Motor Control App ready-to-run

If everything went well, the devices are ready for further operation. The application will display a group of icons with groups of parameters and functions assigned to them.

These paired devices will connect automatically at a later time.



Rysunek 9. Widok gotowej do pracy aplikacji Blue Motor Control.

5.3. Restoring the factory settings of the controller.

If necessary, the PIN code and controller settings can be reset using the SW button. To do this, press the SW button for 10 seconds, if the STATUS diode blinked, the controller restored the default settings. Restoring the factory settings does not remove the remotes from the controller memory.

CAUTION!

Lowering the operating power of the actuators has a positive effect on safety conditions, as well as on the service life of the mechanical elements of the installation.

CAUTION!

Violation of the photocells and blocking the gate during the learning process will not stop the actuator! If necessary, the gate movement can be stopped by pressing the manual STOP button. It will also interrupt the learn operation and restore all parameters of the controller to the values they had before the learn function was initiated. During the learning procedure, the gate must be able to move freely, without any obstacles on its way.

6. Acceptance tests

6.1. General remarks

After installing the controller and all cooperating devices, especially the safety devices, final tests should be made to check the entire automation. These tests should be performed by competent personnel who are aware of the risks involved! Final tests are the most important phase in the implementation of automation. Individual components such as motors, photocells, etc. may require specific checks and therefore it is recommended to follow the checking procedures in the manuals for the relevant components.

- if the actuators contain internal limit switches which interrupt the circuit, make sure that at this stage they will not disconnect the actuator at unexpected moment.
- in case of resignation from the installation of manual control buttons, remember to bridge the 'STOP' terminals. The lack of a bridge will prevent any movement of the actuators.

6.2. Final tests include the following steps

6.2.1. Direction control

Check whether the automation is physically moving in the opening direction when the OPENING function is activated. In a situation when the movement is in the direction of closing, or there is no movement, disconnect the controller power supply and check the connection of the appropriate actuator cables to the appropriate terminals. Check again. Once the controller is powered up, the first move will be to open.

6.2.2. Programming the controller

Set all the required parameters of the controller operation, such as closing and opening times of the actuators, possible slowing down phases, and pulling forces of the actuators.

6.2.3. Safety devices control

If photocells are installed, the OP photocells must be manually violated, the OP LED should go out on the control board. Do the same for the CL photocell and OP / CL, if fitted. In the rest state, when the optical barriers are not violated, the OP, CL, OP / CL diodes should be on. If it is not, it means an error in the operation of the photocells (incorrect connection, not synchronizing the transmitter with the receiver or photocell failure).

6.2.4. Checking the functions controlling the movement of the actuator

Check the A, B, C and STOP functions by using the button on the remote control or the manual button. After successive impulses from the button, the actuators movement sequence should be performed in accordance with the settings.

6.2.5. Force setting

Usually, it is not necessary to operate the actuators with the rated power, it should be adjusted individually to the installation conditions, e.g. by means of the autolearning function (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 arising after closing or opening the gate leaves, and to anticipate the consequences of accidental jamming of an obstacle between the gate leaves. It should be remembered that the lower the parameter value, the smaller the forces will be on any obstacle appearing in the gate's path. When setting the operating power of the actuators, one should be aware of the resistance of the gate leaves, as well as their instability in time (the influence of weather conditions, wear of the mechanical elements, etc.), therefore the set operating power cannot be too low, it must ensure safe guiding of the leaf throughout the entire range of movement of the gate. If necessary, the force increase function can be used, adjustable from 0-50% of the value set for the actuators.



DTM System hereby declares that the controller complies with the directives 2014/53 / EU, 2014/35 / EU. The full text of the EU declaration of conformity is available at the Internet address: www.dtm.pl

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.



The presented symbol informs that a given electric or electronic device, after its end of use, must not be disposed of with household waste. The device should be delivered to a specialized collection point. Detailed information on the nearest collection point is available from your local authority. In addition, the product can be returned to your local distributor when purchasing another device with similar characteristics. By ensuring this product is disposed of correctly, you conserve valuable natural resources and avoid any negative effects on health and the environment which can be put at risk in case of inappropriate waste handling.





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