



HATO

THE NAME OF QUALITY

HATO 400Y HEL 11C

SLIDING GATE OPERATOR
USER'S MANUAL



CE Approved

OUTLINE

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1. Important safety information

Carefully read and follow all safety precaution and warnings before attempting to install and use this operator, incorrect installation can lead to severe injury.

- The gate operator should be installed by a qualified technician; otherwise, serious personal injury or property damage may occur.
- The auto-reverse function must be checked during installation to ensure that the gate can auto-reverse in the event of obstruction.
- This auto-reverse function should be regularly inspected and adjusted, if necessary.
- When opening or closing the gate, do not attempt to walk or drive through the gate.
- Children should not be allowed to play near or operate automatic gates.
- The automatic gate operator must be grounded.
- Install the gate operator on the inside of the property, DO NOT install it on the outside of the property where the public has access to it.
- Be careful when in close proximity to moving parts where hands or fingers could be pinched.
- Do not allow control devices to be placed so that a person can access them by reaching through the gate.
- In the event of power failure, an emergency release key allows you to operate the gate manually.
- The operator should be switched off before repairing it or opening its cover.
- Please erase and reprogram the code after installing the operator.

2. Main technical parameters

Type	HATO 400Y
Power supply	AC 220V, 50Hz
Motor speed	1400 r/min
Gate moving speed	11m/min (19 teeth)
Output torque	14N • m
Limit switch	Spring limit switch
Noise	≤62dB;
Environmental temperature	-20° C~+50° C

3. Installation

The HATO 400 Y rack-driven gate operator operates by forcing a drive rack past a drive gear. The entire configuration is shown in Fig.1. The gate operator must be installed on the inside of the gate.

Gate preparation

Be sure the gate is properly installed and slides smoothly before installing the DKC400Y sliding gate operator. The gate must be plumb, level, and move freely.

Conduit

In order to protect the wires, use PVC conduit for wires, conduit must be set into the concrete when it is poured. Wires within the conduit shall be located or protected so that no damage can result from contact with any rough or sharp part.

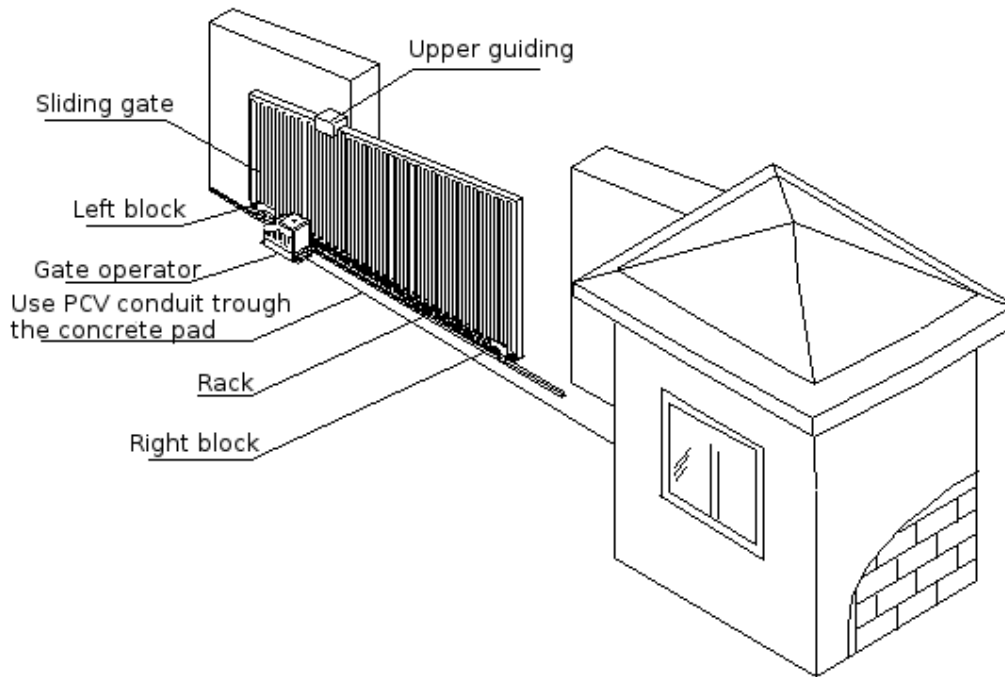


Fig.1

Concrete pad

The base unit of the gate operator requires a concrete pad in order to maintain proper stability. The concrete pad should be approximately 300mm x 200mm x 200mm deep in order to provide for adequate operation.

Anchors

You can use the anchors, bolts, washers and nuts that are provided with the operator. These anchors must be set into the concrete when it is poured, or you can use wedge anchors.

Operator

In locations where ground freeze is possible, mount the gate operator on installation pad as shown in Fig.2. Check the operator and make sure it is lined up with the gate.

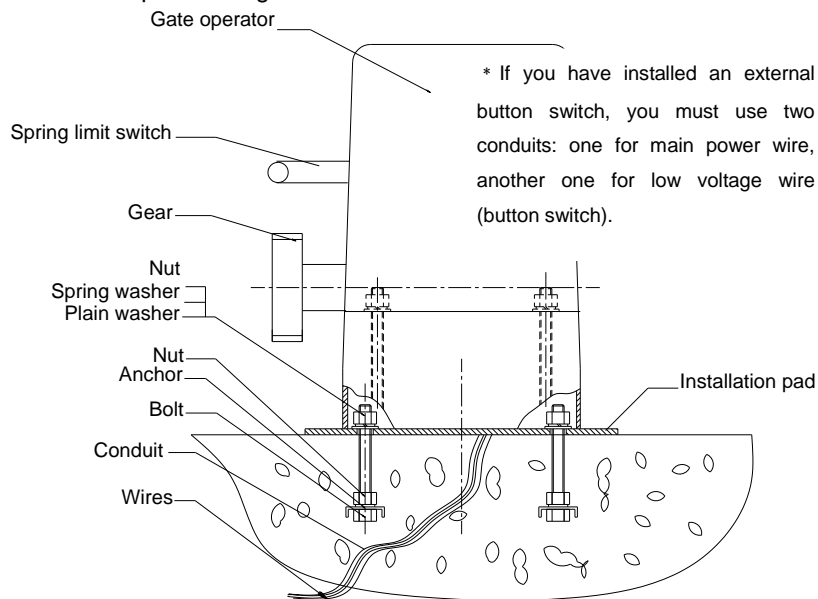


Fig.2

Installation of rack (see Fig.3)

- Fix the three nuts (in the same package with rack) on the rack element.
- Lay the first piece of rack on the gear and weld the first nut on the gate.
- Move the gate manually, checking if the rack is resting on the gear, and weld the second and third nut.
- Bring another rack element near to the previous one. Move the gate manually and weld the three nuts as the first rack, thus proceeding until the gate is fully covered.
- When the rack has been installed, to ensure it meshes correctly with the gear.
- The space between rack and gear is about 1mm.

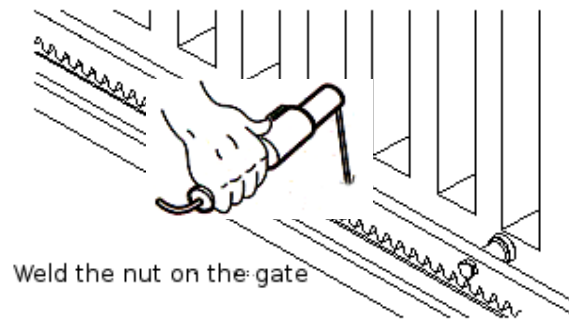


Fig.3

Spring limit switch

- To ensure safety, it is recommended to install plastic blocks at both ends of the gate to prevent the gate from sliding out of the rail. The rail must be installed horizontally.
- Install the plastic block as shown in Fig.4 and Fig.5. The spring limit switch and blocks are used to control the position of the gate.
- Release the gear clutch with the key and push the sliding gate manually to pre-determine the position, fix the block to the rack and then tighten the gear clutch with the key. Moving the gate electrically, adjust the block to the proper position until the position of the opening and closing meet the requirement.

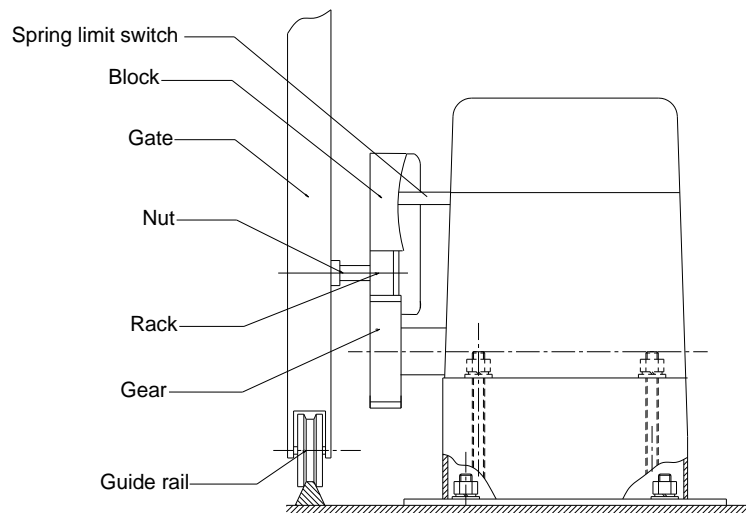


Fig.4

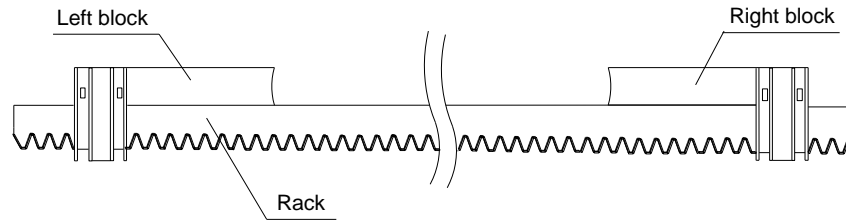


Fig.5

CONFORMITY DECLARATION:

Motor Hato 400Y meets the requirements set out in the following provisions:
It's in accordance with Machine Directive 2006/42/WE and following modify.

It's in accordance with the following directive CE:

Electromagnetic compatibility Directive EMC 2014/30/UE and following modify.

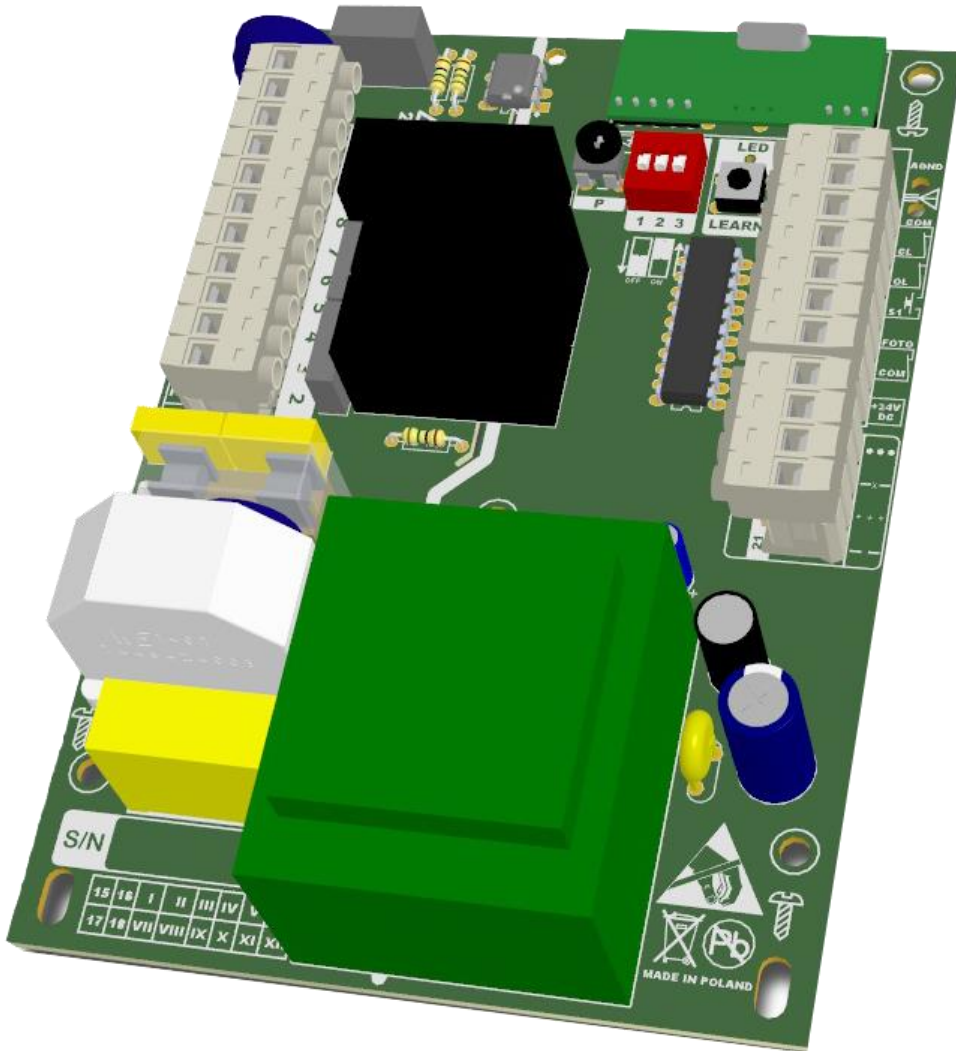
Low tension Directive LDV 2014/35/UE and following modify.

Have been applied the following harmonized norms:

EN60335-1:2012, EN60335-2-103:2015-3, EN 55014-1:2012, EN 55014-2:2015-06,

EN 61000-3-2-2014-10, EN 61000-3-3:2013-10

**Controller of Gate
Drives for 230Vac
500W Motors**



USER'S MANUAL

SOFTWARE

MARKING	NOTES
1.2.0-C-NO 11:8.2.2/6.1.0	HEL11C

Before the installation and first use of the controller read the manual carefully and keep it for future reference.

According to the Machinery Directive 2006/42/CE, the product must not be put into service until the final machinery into which it is to be incorporated or of which it is to be a subassembly has been declared in conformity with the provisions of directives and relevant regulations which the final machinery must comply with.

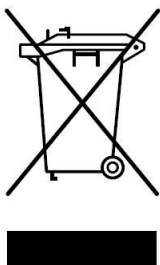
Safety recommendations and precautions:

Before installing and using the drive read all safety warnings and rules. Incorrect installation and failure to observe the standards included in the manual can cause serious accidents.

- The controller can be installed only by qualified personnel with relevant licences.
- A basic protection against electrostatic discharges (ESD) shall be provided during the installation.
- Caution shall be exercised during the installation. The controller uses the 230Vac voltage (hazardous to health and life).
- All works related to the correct functioning of the device (connection, start-up, operation) must be performed in accordance with relevant regulations concerning the use of electrical machines and in line with the OHS regulations.
- Do not connect the supply voltage earlier than specified in this manual! Failure to comply with this recommendation can cause an electric shock.
- Check the gate condition before starting the installation: the gate should not swing too much, it should move easily and smoothly.
- Before the installation, remove unnecessary ropes and secure the equipment, e.g. locks.
- Children, disabled persons and mechanical vehicles should not be present in the vicinity of the gate during the installation.
- All fixed controls should be located near the gate, but away from the moving parts and out of reach of outsiders.
- Disconnect the power supply before repairing or removing any part of the gate.
- Children and mentally disabled persons must not operate the gate by themselves.
- Motor and applicable force can be done by qualified personnel equipped with gauge force meter.
- In the controller without encoder input it is necessary to connect gate optical curtain or other safety elements preventing from accidentally crush.
- Fluorescent lamps cannot be connected to the controller.

The controller can be used only in specified applications.

Failure to observe these instructions can lead to serious injuries or destruction of the equipment. The manufacturer will not be liable for losses and disruption in work resulting from non-observance of this installation and operation manual.



According to relevant regulations concerning the disposal of used equipment by the private users in the European Union, an object bearing this symbol **MUST NOT** be disposed of together with regular wastes. In such case the user is responsible for correct disposal by delivering the equipment to a specialized outlet or to the manufacturer who will take care of the further disposal. Separate collection and recycling of used equipment facilitates the environmental protection and ensures that disposal is carried out in a manner safe to human life and the environment. This remark also applies to spent batteries, disposable and rechargeable.

Version : HEL11C

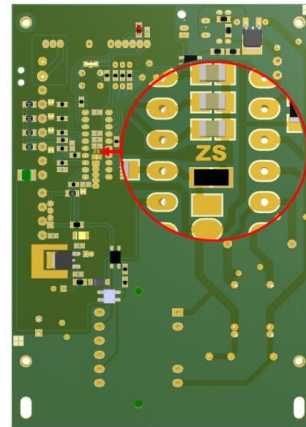
- – cooperates with Hato's transmitters operating at a 433.92 MHz frequency and compatible with Keeloq protocol.
- – with encoder input
- – lamp control by relay

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1. Application and functionality of HEL11C

The controller is designed for gate drives with 230Vac motors. A perfect choice for continuous operation, the controller can be used in community car parks, private homes and corporate compounds. Applied Microchip rolling code technology prevents from not authorized entrance. The controller cooperates with monostable pushbutton with Step-By-Step functionality, (OPEN-STOP-CLOSE-STOP) The control unit perform following operations: Autoclose, Open only and Automatic wicket. There are two available main versions. First one with encoder input, and second one without it.



If you have controller without encoder input - skip point 2.2.

2. Installation

Install the controller into drive. All dimensions are in the Picture 1. After correct installation continue with electrical connection.

! The controller uses the 230Vac voltage and it can be installed only by qualified personnel with relevant licences

The manufacturer will not be liable for losses and disruption in work resulting from non-observance of this installation, operation manual and applicable regulations.

2.1 Limit switches connection

At first connect limit switches to the controller inputs marked as (16,17,18). Check the gate condition: the gate should not swing too much, it should move easily and smoothly between limit positions. If necessary adjust placements of magnetic parts.

- 16 (OL) —open limit,
- 17 (CL) — close limit,
- 18 (COM) — common, (white wire)

The controller cooperates with Normally Open or Normally Closed limit switches. To change type of limit switches solder the ZS jumper on PCB. With soldered jumper version marked as NO cooperates with NC type switches and version marked as NC cooperates with NO switches.

2.2 Encoder connection

Motor encoder must be connected to the inputs marked as "ENCODER" (Pic.2)(21,22,23,24).

Connect the encoder wires to the plug according to wiring diagram description. The controller uses encoder impulses to calculate applicable force. Uncorrect connection may cause improper operation and hazardous situation to health and life.

- 21 - — — - encoder signal
- 22 - + + + - GND
- 23 - —x— - GND
- 24 - ● ● ● - supply (+5V)

Encoder parameters: 717 impulses per second (speed 1450rpm)

2.3 Photocell connection

Photocell barrier is a necessary safety element which must be connected to the controller. It increases safety and prevents a gate wing from hitting a car, a person or an object which are within the photocells' range. In the controller without encoder input it is necessary to connect gate optical curtain or other safety elements preventing from accidentally crush. It should be in series with photocell.

- 12 – Photocell supply +24Vdc
- 13 – Photocell supply GND
- 13-14 –Normally Closed contact

Output (+24V) current cannot exceed < 450mA. Make sure power consumption of all connected accessories. Example of photocell connection is shown on the wiring diagram.

2.4 Step-By-Step pushbutton connection

Connect the SBS pushbutton using 2x 0,5mm² wire which parameters are according to regulations: CEI 20-22; CEI EN50267-2-1. Maximum distance of connection depends on selected wire. Series resistance should not exceed 100ohms.

Connect momentary pushbutton switch to the inputs marked as S1 (15) and COM (18).

2.5 Capacitor connection

Connect capacitor to the inputs on the left side marked as 8 i 9.

2.6 Motor connection

Connect motor's wires to the left connector plug according to description or wiring diagram:

11 (COM) – common

10 (OPEN) –open direction

7 (CLOSE) –close direction

1 (PE) – protective earth PE (yellow-green wire)

2.7 Signalling lamp connection

Connect signalling lamp (230Vac) to the inputs on the left side marked as 5 (neutral – blue wire) and 6 (phase – brown wire). Lamp power cannot exceed 15W/230V. When used lamp with built-in flashing module before installation switch off the flashing function in the controller (according to 3.5 point).

2.8 Mains supply connection



Mains supply must be protected by earth leakage circuit breaker

Mains connection should be applied at the end of installation. Connect mains wires to the inputs on the left side marked as:

2 (PE) – protective ground (yellow-green wire)

3(L) – phase wire (brown wire)

4 (N) – neutral wire (blue wire)

Before first using check the correct power supply, ground protection and wire connections. Wires should be as short as possible. Keep control wires away from high current wires. Avoid wires loop.

2.9 Open direction check

Set the gate manually in the middle position. The first

command after powering up is “open”. Press the SBS or programmed transmitter button. If drive works in closing direction stop the motor, switch off the power supply and switch motor's leads connected to the inputs OPEN(10) and CLOSE(7).

If the drive operates properly check functionality of all connected accessories. In case of problems check wiring connection and adjust motor force or applicable force setting.

2.10.1 Motor power adjustment (HEL11C



The controller uses the 230Vac voltage and it can be installed only by qualified personnel with relevant licences

version) ??

Fitted on the control unit “P” potentiometer adjusts maximum motor power. Take great care when adjusting the power as this may affect the level of safety of the automatic system. **Measure the force applied to the gate and compare it with regulatory values.**

2.10.2 Applicable force adjustment -(HEL11C)

The controller uses encoder impulses to calculate applicable force. To adjust the sensivity of the controller use the “P” potentiometer. In minus direction sensitivity decreases, in plus direction sensitivity increases.

Adjustment must be carried out according to applicable regulations.

Disconnect the power supply before checking wire connection.

2.11 Optional STOP button connection

Connect external normally closed switch according to wiring diagram.

3. Settings and programming

3.1 Autoclose

In the autoclose operation mode, an opening manoeuvre is followed by a pause and then an automatic closing manoeuvre. The closing time is determined by the delay in turning off the light. It is activated when the OPT1 (DIPSWITCH) micro-switch is put to ON. When the Auto-close function is active, the principle of light operation is different: the light is slowly flashing when the gate is opening, the light is on when the gate stays open, and is flashing during automatic closing. When the gate stops, the light is off. The Auto-close function

necessitates photocells to ensure user safety (to prevent gate from closing when an obstacle is within its range!). In addition, the photocells will reduce the opening time. The controller will detect the passage of a vehicle and will close the gate after 5 seconds. When the Auto-close function is active, all programming procedures can be performed only when the gate is stopped after closing.

3.2 Autoclose time setting

To program the controller use the LEARN button and the LED on the controller board. Press the LEARN button less than 3s, the LED will light up. Then, by pressing the same button you can set the delay time. One keystroke corresponds to 15 seconds, (e.g. 4 keystrokes mean 1 minute; the LED dims at each keystroke). When you have finished programming, the processor will automatically save the settings after 3s, flash the LED three times and return to normal operation.

Example of autoclose time setting shows Tab1.1

3.3 Open only function

Open-only function facilitates communication through entry-exit and guarantees that a third party will not close or stop the gate in the least opportune moment. Photocells are necessary for safety. It works only with the Auto-close function and is activated by putting the OPT1 and OPT2 micro-switches to ON. A command from the remote or from manual control will tell the controller to open the gate in each case, and then the gate will be closed by the Auto-close function.

3.4 Automatic wicket

It is activated when the OPT3 (DIPSWITCH) micro-switch is put to ON. In the automatic wicket operation mode, when the controller will detect the passage of a vehicle or person (photocell) during opening the gate will stop. To close the gate push the SBS or programmed transmitter's button. When autoclose function is also activated when the controller will detect passage the gate will stop and after 5s will close.

3.5 Signalling lamp

It can work in two modes. In the first mode, as warning signals when the gate is moving. In the second one, as an auxiliary lighting of a vehicle or garage with delayed off. In the second mode the lamp is on when gate is moving. To switch off second mode put the OPT1 (DIPSWITCH) micro-switch to OFF. Press the LEARN button less than 3s, the LED will light up. Wait 3s, the controller will flash the LED three times and return to normal operation.

4. Transmitters deleting and programming

4.1 Deleting all transmitters

Press the LEARN button and hold, the LED will light up, go out and then it will start to flash. Release the button. The deleting procedure is completed. We recommend that this procedure is performed right after installation.

4.2 Transmitters programming

You can program up to 40 remote controls with Keeloq's rolling code. Each remote must be programmed separately. Press LEARN and hold until the LED lights up and goes out. Release the button. Now you have 10 seconds to press a selected button in the remote control. When the LED flashes three times, the learning process has been completed successfully. If you wish to program more transmitters, after three LED flashes you have next 10 seconds to program the second remote, etc. A single LED flash means that the learning process is finished. When you have programmed 40 remotes, the memory is full and the LED will flash only two times and will return to the normal operation. If the memory is full, check if you really use 40 remotes. If you use fewer than 40 remotes, clear the memory and reprogram all remotes, and when you use more than 40 remotes use an additional module eL3 which will increase the number of transmitters to 64. When the learning error occurs, repeat the programming and if this does not help either use another remote in good working order. If you still fail, contact the authorized service.

4.3 Remote transmitter programming

It is possible to program new transmitter using four-channel earlier programmed transmitter. The gate must be fully open. Push the C and D buttons of the programmed transmitter for 5s. The signalling lamp will light up. Now you have 5 seconds to press a selected button in the new remote controller. When the lamp flashes three times, the learning process has been completed successfully. A single LED flash means that the learning process is finished.

Tab.1.1. Autoclose time setting (e.g.)	
1. Press the LEARN button. The LED will light up. Release the button.	
2. Then, by pressing the same button you can set the delay time. One keystroke corresponds to 15 seconds, (e.g. 4 keystrokes mean 1 minute; the LED dims at each keystroke).	 4x
3. Wait 3s, the controller flash the LED three times and return to normal operation.	 3s 3x

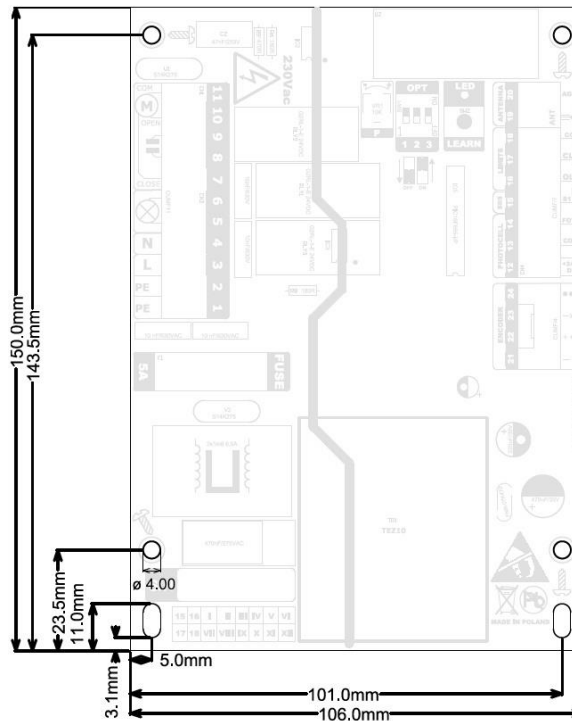
Tab.1.2 Deleting all transmitters	
1. Press the LEARN button and hold, the LED will light up, go out and then it will start to flash. We recommend that this procedure is performed right after installation.	 5x
2. Release the button. The deleting procedure is completed.	

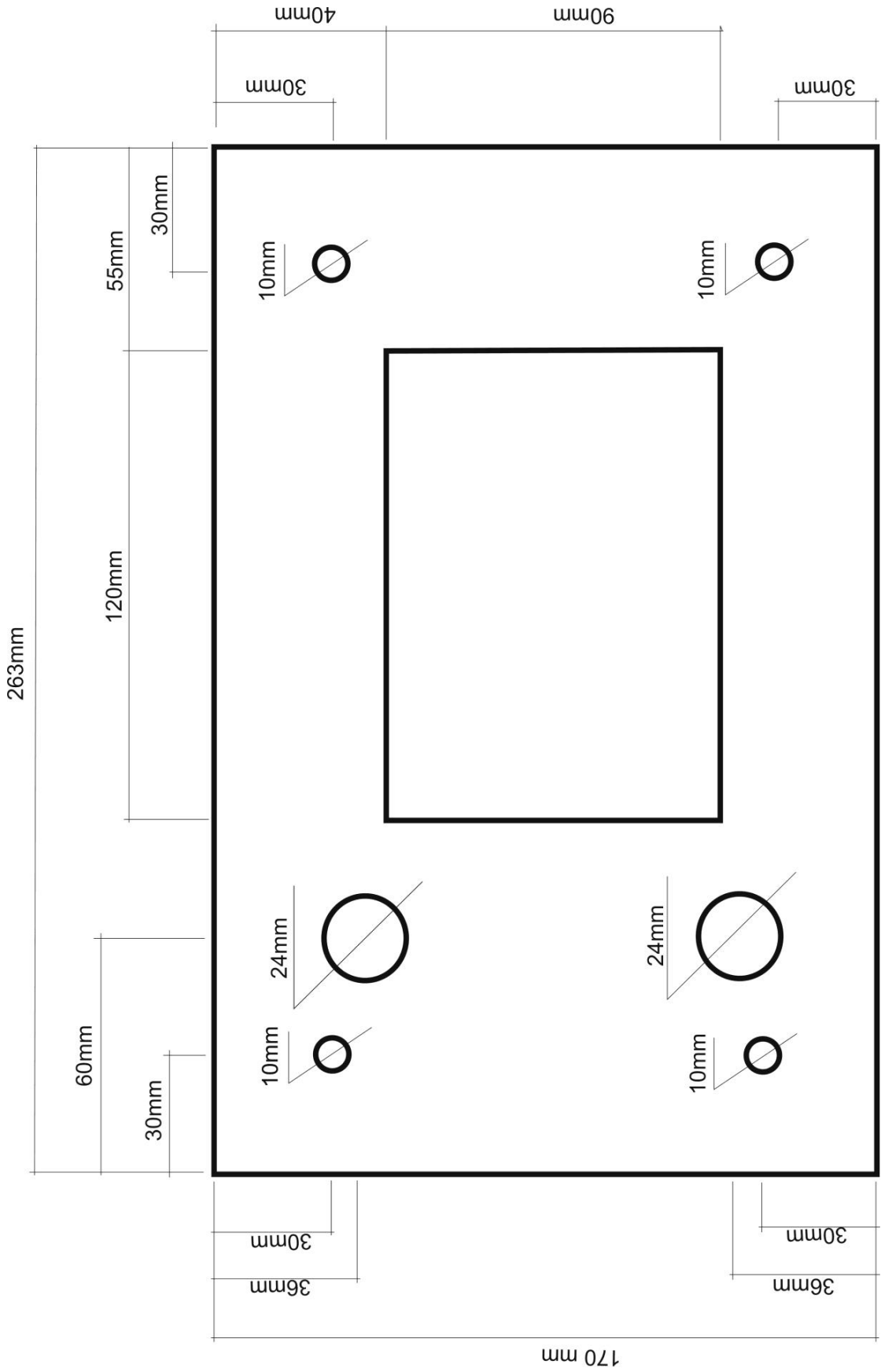
Tab.1.3 Transmitters programming	
1. Press LEARN and hold until the LED lights up and goes out. Release the button.	
2. Now you have 10 seconds to press a selected button in the remote control. When the LED flashes three times, the learning process has been completed successfully.	 10s
3. When the LED flashes three times, the learning process has been completed successfully. A single LED flash means that the learning process is finished.	 3x 1x 10s

5. Technical specification:

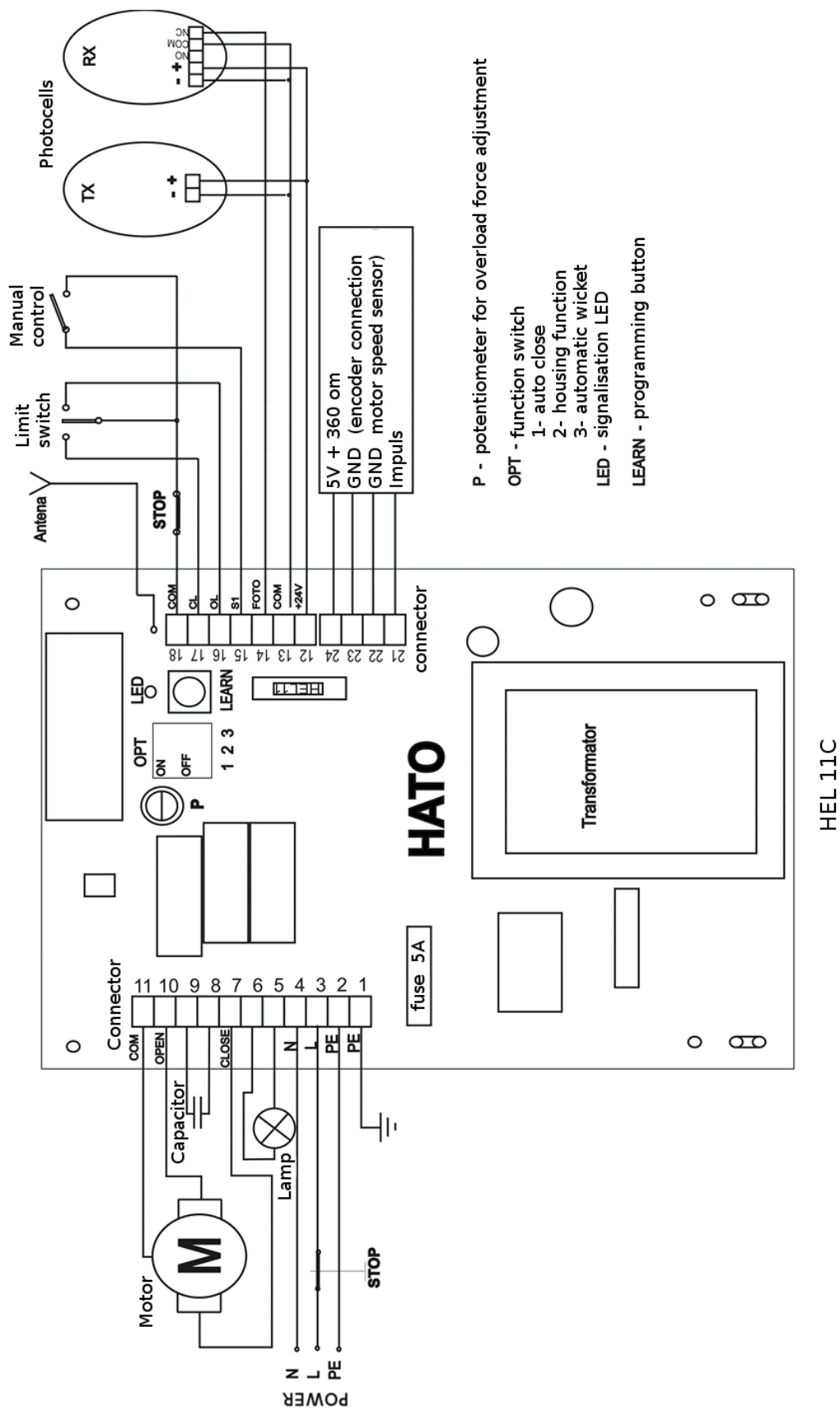
Power supply:	AC 230V, 50Hz
Current consumption in standby:	< 25mA AC
Power consumption in standby:	< 10 W
Transmitters range:	<200m
Frequency:	433,92MHz
Transmitters type:	
Version	HATO Keeloq
Transmitters memory:	40 pcs
Autoclose max time:	5s - 10min
Operation max time:	120 sec.
Operating temperature:	-20°C +70°C
Fuse type:	5A/230V, \varnothing 5x20

6. Dimension





7. Controller wiring diagram



Picture 2

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