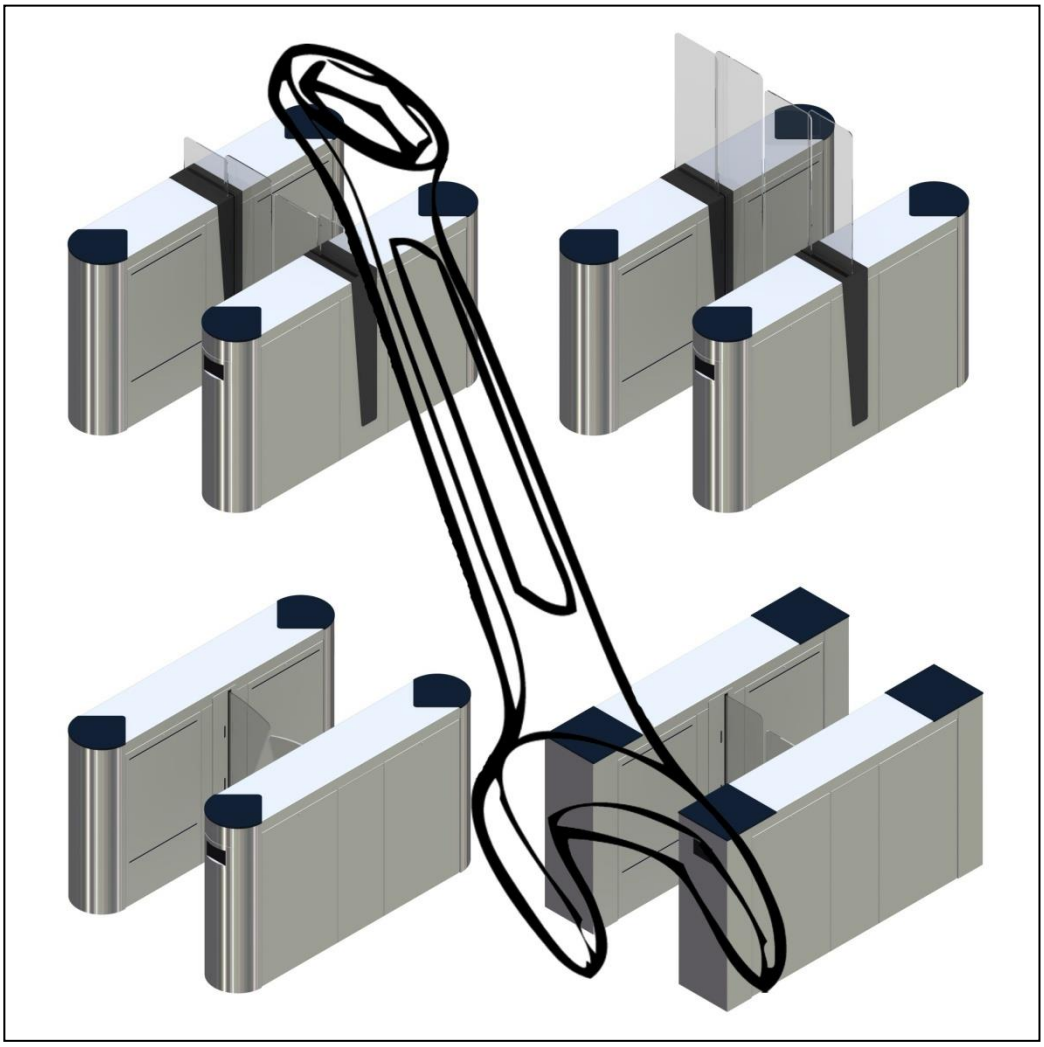


INSTALLATION INSTRUCTIONS FOR TURNSTILES TYPE:

EASYGATE

(EASYGATE-LX, EASYGATE-LH, EASYGATE-FL, EASYGATE-FH)

With electronics MLU5

Appendices at the end of these installation instructions:

- CLAIM REPORT FORM

1. INTRODUCTION

These Installation Instructions are intended for technicians of the Service Department of the COMINFO Company, or workers who passed the Installation schooling provided by the COMINFO company. These Instructions describe installation procedure, electronic construction, function and connection of individual components of the whole EASYGATE system of turnstiles, which is intended for checking and control of passing persons.

Chapters dealing with connection of control electronics are for illustrative purposes intentionally compiled in a way so that the colour design of interconnecting cables is clear. In case of a printed version of these Instructions, the manufacturer strongly recommends to print them in colour. Instructions are intended for turnstiles fitted with MLU electronics of the 5V6 version or higher.

Turnstile installation must always be performed in accordance with approved project documentation!

Integral part of these Instructions are also the separate *Instructions for use of the EASYGATE-LX, LH, FL and FH* type turnstiles, which contains basic description of the turnstiles, description of the turnstile operation and a Troubleshooting chapter.

The Instructions employ the following categories of safety instructions:

DANGER!
Mechanical danger. Omission of these instructions may cause personal injuries or device damage.

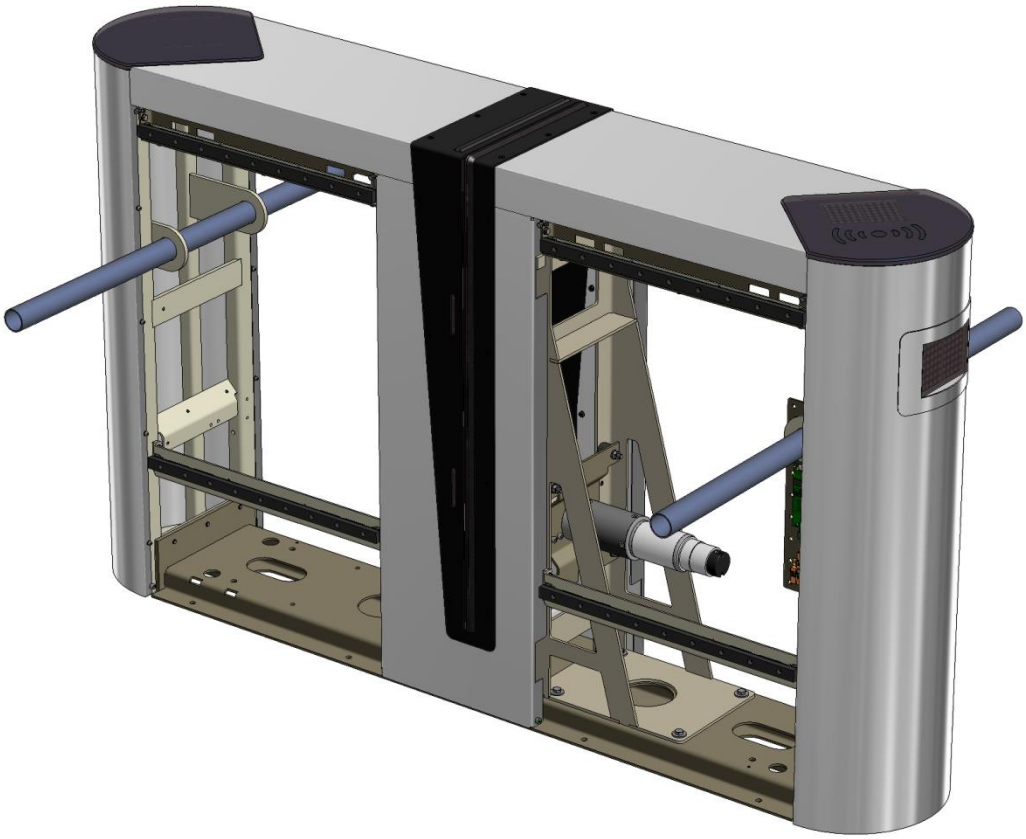
WARNING!
Important information or procedure.

NOTICE!
Information or procedure recommending how to use the device or its equipment optimally and thus prolong its lifetime, prevent potential damage and optimize work in relation to the safety standards.

2. TURNSTILE TRANSPORT AND HANDLING

Turnstile is packed in a transport wrapping. Transport the turnstile to the place of destination in its transport boxing using a forklift. When handling the turnstile, pay increased attention with regard to the safety of persons and potential damage of the turnstile.

After unwrapping the turnstile, remove all side covers from the transporting box (According to chapter *How to access the anchoring holes and motor drive unit with control electronics*). Take the turnstile off the platform using two suitable pipes. Slide these pipes into Ø42 holes in the inner turnstile frame as per the figure below. After lifting it up, carry the turnstile to a predetermined place.



Four workers must cooperate to handle the turnstile using pipes. Pay increased attention and hold the turnstile in balance for the entire transport time.

Remove all stainless-steel covers in accordance with the procedure stated in the chapter *Description of the Installation***, before you start handling the turnstile using pipes.**

Table of weights of EASYGATE-LX turnstiles including wings:

Wing height:	940 mm	1200 mm	1800 mm
Turnstile	Weight [kg]	Weight [kg]	Weight [kg]
EASYGATE-LX-S (side)	**184**	**195**	**202**
EASYGATE-LX-M (middle)	**227**	**239**	**249**
EASYGATE-LXI-S (side)	**217**	**223**	**244**
EASYGATE-LXI-M (middle)	**263**	**272**	**296**

Table of weights of EASYGATE-LH turnstiles including wings:

Wing height:	940 mm	1200 mm	1800 mm
Turnstile	Weight [kg]	Weight [kg]	Weight [kg]
EASYGATE-LH-S (side)	**209**	**212**	**227**
EASYGATE-LH-M (middle)	**252**	**256**	**263**
EASYGATE-LHI-S (side)	**246**	**263**	**275**
EASYGATE-LHI-M (middle)	**295**	**311**	**328**

Table of weights of EASYGATE-FL turnstiles including wings:

Turnstile	Weight [kg]
EASYGATE-FL-S (side)	**183**
EASYGATE-FL-M (middle)	**226**
EASYGATE-FLI-S (side)	**214**
EASYGATE-FLI-M (middle)	**260**

Table of weights of EASYGATE-FH turnstiles including wings:

Turnstile	Weight [kg]
EASYGATE-FH-S (side)	**208**
EASYGATE-FH-M (middle)	**250**
EASYGATE-FHI-S (side)	**245**
EASYGATE-FHI-M (middle)	**292**

3. INSTALLATION OF THE TURNSTILE

Turnstile is supplied partially disassembled and its installation requires technical knowledge, knowledge of technological assembly procedure and skillfulness.

Turnstile can only be installed by a COMINFO service department employee or worker, who possess the certificate of installation schooling from the COMINFO Company.

Connection to the mains power supply may only be performed by an authorized person with the appropriate qualifications.

For correct function of the turnstile, the area of installation must be perfectly level.

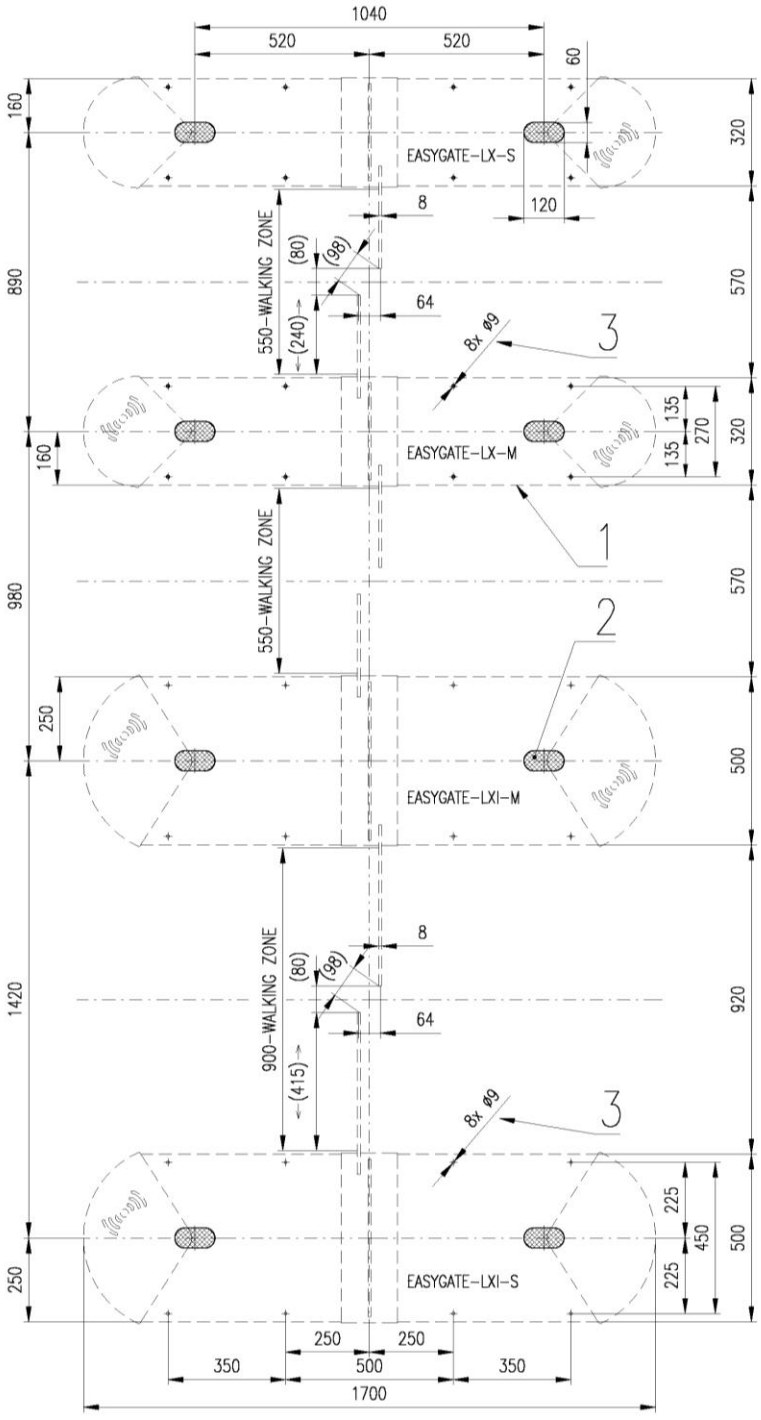
When putting the turnstile into operation, it is necessary to perform an initialization, during which the turnstile wings slowly reach end stoppers in both directions, and immediately afterwards stop in the closed turnstile position. To properly load the correct path of the wings there must not be any object or person present in the path of the wings during the initialization.

3.1. DIMENSIONS FOR ANCHORING

CAPTIONS FOR THE FIGURES:

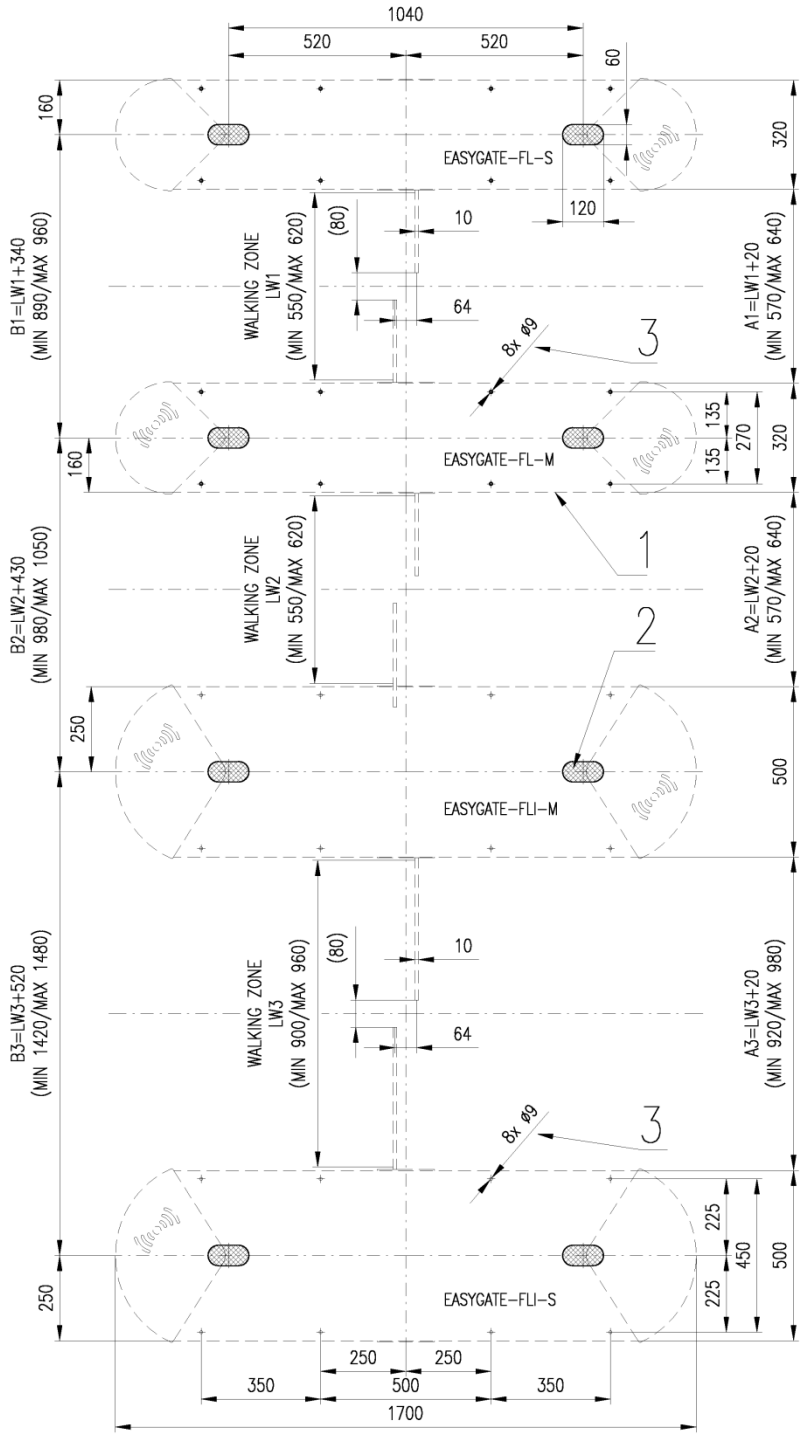
1. Contour of the turnstile (dashed lines)
2. Holes for cables (cross-hatched)
3. Holes for M8 anchoring bolts

3.1.1. EASYGATE-LX and LH



Basic anchoring dimensions for the EASYGATE-LH turnstile are identical to those of EASYGATE-LX.

3.1.2. EASYGATE-FL and FH



Basic anchoring dimensions for the EASYGATE-FH turnstile are identical to those of EASYGATE-FL.

3.2. THE SYSTEM OF TURNSTILE ARRANGEMENT

The system of turnstile arrangement is always that the outer turnstiles are the SIDE type and in between are the MIDDLE type, this way you can arrange any number of gates. Two SIDE type turnstiles are necessary to form one basic gate. When placing turnstiles for multiple gates with a EASYGATE MIDDLE turnstile type, it is necessary to differentiate the outer EASYGATE-SIDE turnstiles in terms of internal electronic equipment:

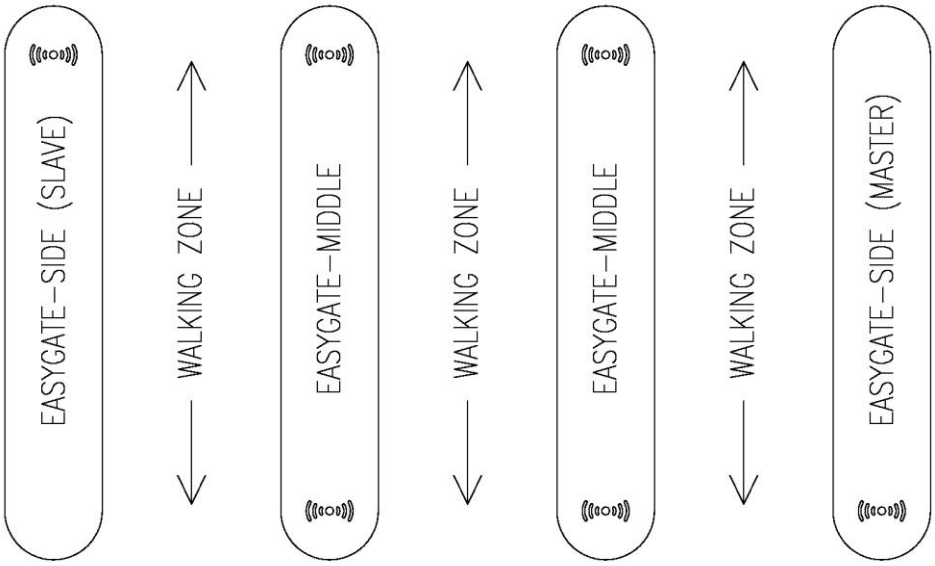
EASYGATE SIDE MASTER:

The turnstile has built-in receivers of optical passage sensors and control electronics which controls both drive units of one gate.

EASYGATE SIDE SLAVE:

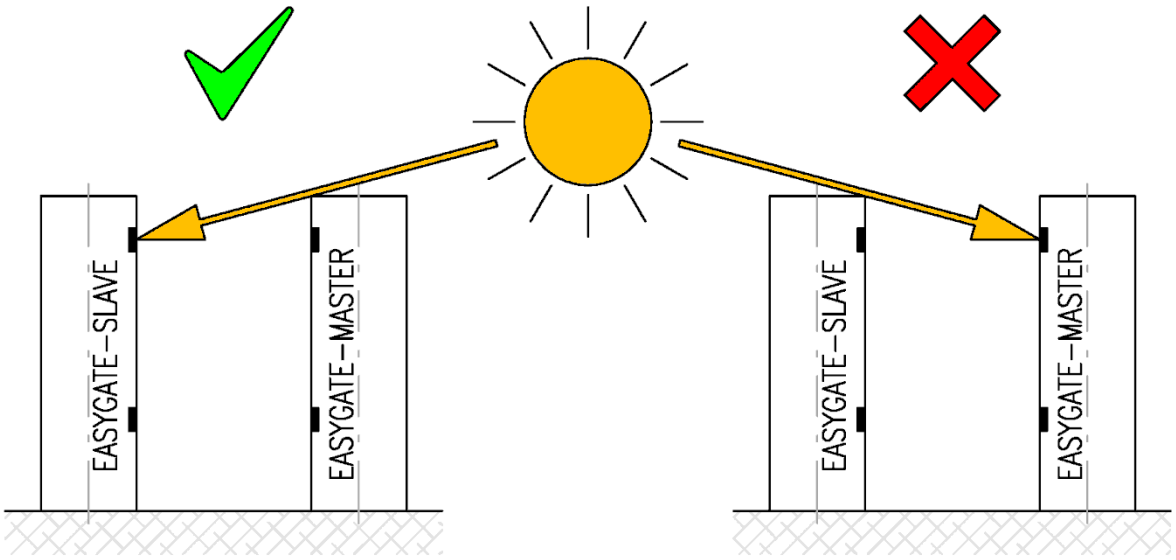
The turnstile has only a motor unit built-in, it is equipped with transmitters of optical sensors and is only able to operate in connection with the EASYGATE SIDE MASTER or EASYGATE MIDDLE turnstile.

Example of turnstile arrangement for three gates:



THE EFFECT OF SUNLIGHT ON THE WAY OF TURNSTILE INSTALLATION:

If there is a chance that the rising or setting sun will shine directly on turnstiles in the place of installation in a way that receivers of optical sensors of passage gate of a **MASTER** turnstile will be exposed to direct sunlight, we must carry out appropriate measures so that this does not happen or turn the installation in a way that the sun shines to the transmitters of optical sensors of the **SLAVE** turnstile. Oversaturation of receivers of optical sensors by sunlight would cause the sensor to evaluate an obstacle in the turnstile corridor and make the turnstile close and open incorrectly, making it non-functional.



If it is not possible to carry out appropriate measures or turn the installation, we must substitute the transmitting and receiving optical sensors of the respective passage gate. In case such substitution is performed, it is necessary to expect that the turnstile will be put out of operation for about 2-4 hours. Perform the substitution according to chapter *Substituting the transmitting and receiving sensors*.

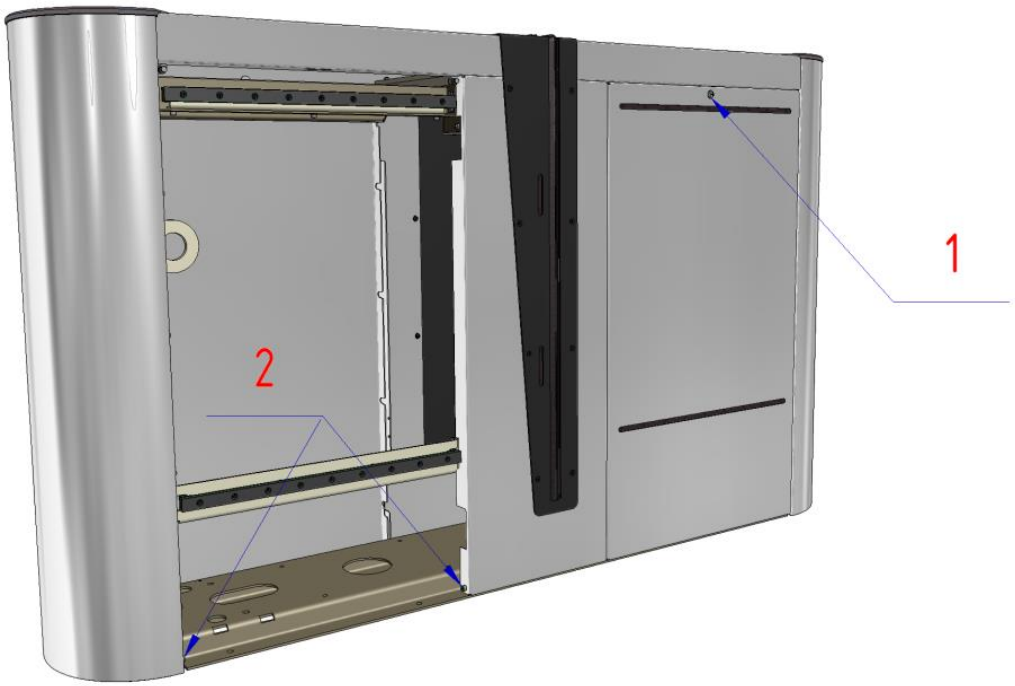
3.3. HOW TO ACCESS THE ANCHORING HOLES AND MOTOR DRIVE UNIT WITH CONTROL ELECTRONICS

Access the anchoring holes after disassembling four side covers of the turnstile.

Procedure for removing the side cover:

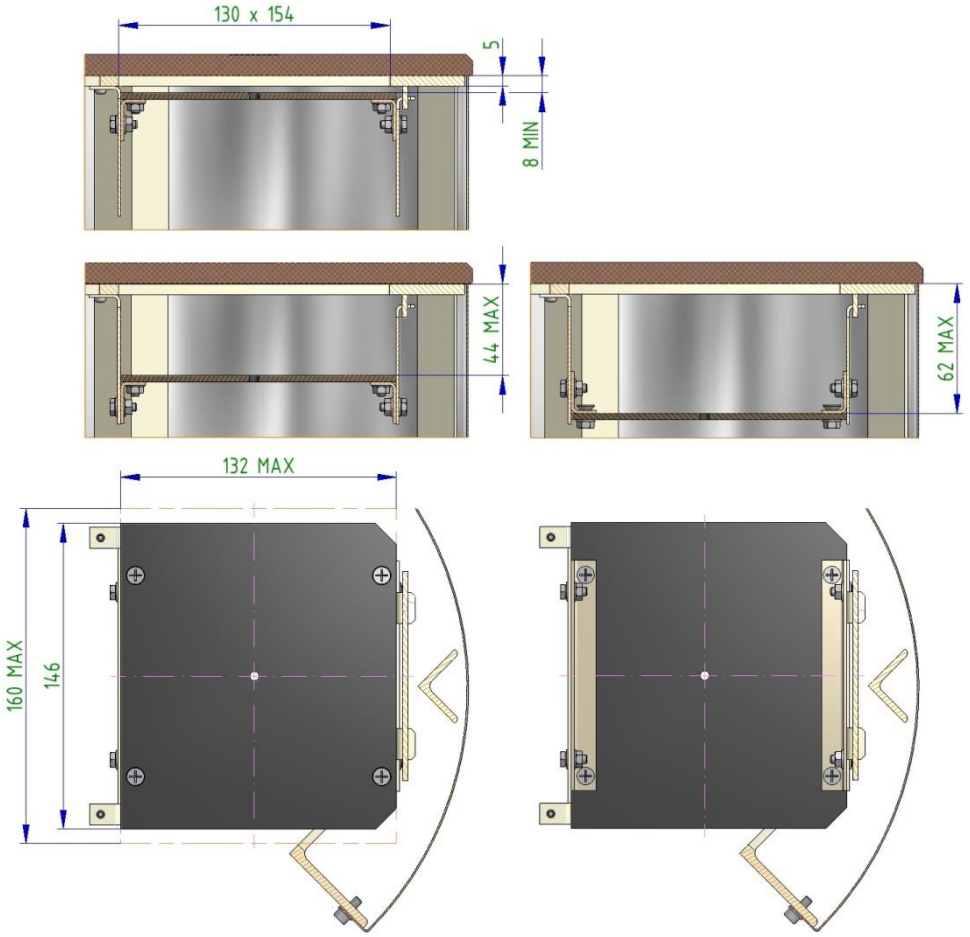
- Insert the key into the area of two opposing keyways on the lock.
- Push the key slightly into to lock.
- To unlock, turn the key in the direction of the next keyway on the lock.
- By pulling the key, slightly tilt the cover from the turnstile.
- By pulling the cover up, release the cover from the lower pins (pos.2).
- Put the dismounted cover on a predetermined place.

Reassemble the covers in reverse order. To prevent damaging the lock it is necessary to push the side cover into the turnstile when locking.



Access to the motor drive unit with control electronics is gained after dismounting the respective side cover. Location of the motor drive unit with control electronics for individual passage gates is described in the chapter *Connection of the power part of EASYGATE-LX and FL*.

3.4. RFID SENSOR INSTALLATION DIMENSIONS



The top glass above the RFID sensor has thickness of 10mm. If there is an Access Light device (upper signaling LED display) placed beneath the upper glass of any of the EASYGATE turnstiles, the distance of the RFID proximity reader from the upper glass surface is increased by 6mm to 16mm.

3.5. DESCRIPTION OF THE INSTALLATION

3.5.1. NECESSARY TOOLS FOR INSTALLATION

All fastening materials used in the turnstile are metric.

- Turnstile Tester
- NOTEBOOK with current version of the TCONF and TDIAG application
- USB/485 converter with connection cable
- Manuals for accessories installed in the turnstile

- drill hammer
- ACU screwdriver with adjustable torque
- set of drill bits for concrete with diameter of 8 to 12mm (for minimum drill depth of 100mm)

- set of Allen Keys from 2.5 to 6mm
- cross-point screwdriver PH1, PH2, PZ2
- slot screwdriver 2.5 and 3.5mm
- set of spanners 5.5 to 19mm
- ratchet with set of nuts from 5.5 to 19mm, TX T30 and TX T45

- Lineman's pliers
- tongue-and-groove pliers
- pincers
- cable stripping pliers
- electrical wire stripping pliers
- crimping pliers
- knife

- pencil (not a chalk or brick)
- tape measure and steel tape measure
- ruler (long straight batten or wiring lath)
- 2 cords of needed length to set installation axes
- water level
- try square
- extension cable for electrical tools
- multimeter
- tweezers

- broom and dustpan
- brush for cleaning of dusty parts
- duster and detergent for glass and stainless steel *(according to the turnstile manual)*

- chemical anchors or different anchoring material
- quick-setting concrete
- hollow pin connectors of sizes (0.25; 0.5; 0.75; 1; 1.5)
- cable ties
- insulating tape
- set of spare bolts, nuts, and washers M3 to M10

3.5.2. RECOMMENDED TOOLS FOR INSTALLATION

- handheld angle grinder

- set of drills for iron with diameter 2 to 10mm
- step drill bit size 6 to 30mm for metal sheet
- screwing tap size M3 to M8
- TX key T30 and T45

- round and square files
- hammer 500g

- Loctite 243 (to fix screws)
- silicone sealant
- mounting foam
- vaseline

3.5.3. LIST OF MANUALS NOT INCLUDED IN THIS MANUAL

- **MLU5 control electronics - see manual:** *MLU5 service manual*

- **Communication line 485 - see manual:** *RS485 Connection Principles*

- **Control panel – see manual:** *Touch panel* or *Easy Touch*

- **Access Light – see manual:** *Access Light*

- **Wav player – see manual:** Wav player

- **CLU – see manual:** *CLU*

- **TCONF** (Configuration SW for setting the parameters and diagnostics of the turnstile)
  – see manual: *Instructions for the TCONF application*

- **TMON** (SW application for controlling and monitoring of the turnstiles activity)
  - see manual: *Instructions for the TMON application*

- **TDIAG** (SW application for controlling the 485 communication of all the devices in the turnstile)
  - see manual: *Instructions for the TDIAG application*

- **TURNSTILE TESTER** (Control panel for checking correct function of the turnstile)

3.5.4. GENERAL DESCRIPTION OF THE INSTALLATION

The area of installation must be free from clutter and perfectly even before you start installing. Base for anchoring has to be solid enough so that stability of the turnstile is ensured. In case of large unevenness of the ground, use special bolsters. These bolsters are made with regard to the actual state of the ground after its precise measuring.

When measuring, marking and drilling, it is essential to work with precision of 2mm. Especially in the initial phase of assembly, a cooperation of at least 3 workers is essential for observing the accuracy.

Anchoring the turnstiles to interlocking paving or double floor:

No special mounting console is required for anchoring of EasyGate - LX, LH, FL and FH turnstiles to interlocking paving or double floor. Square load of the turnstile is 300 kg/m^2.

Description of the installation:

1. Determine axis (axes) of the turnstile system and other components (e.g. barriers).

2. Line up particular turnstiles or other components of the system in required distances on the axis. If needed, pad the turnstile base so the turnstile is perfectly vertical.

3. After lining up, mark centres of the holes in accordance with anchoring dimensions in the chapter *Dimensions for anchoring* and drill holes in accordance with the used anchoring material:

   - **Chemical anchors M8x100** (recommended by the manufacturer) – drill at least 12mm x 100mm. Carefully clean the hole – get rid of dust.

   - **Bolted anchors M8x100** ("drivers") – drill 8mm x 100mm. Clean the hole and check its sufficient depth.

   - **Other anchoring material** (such as Turbo bolts) – proceed in compliance with the instructions of manufacturer of the anchoring material.

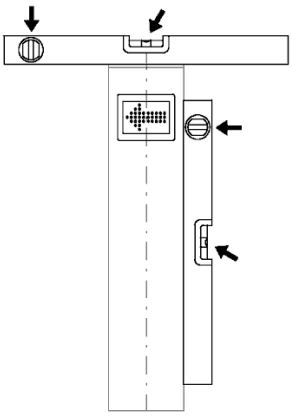
   The holes for the anchoring material must be drilled at the right angle to the floor and the procedure based on used anchoring technology must be strictly adhered.

4. Lead the power supply cable through the base plate of the turnstile to the main terminal block **X1**.

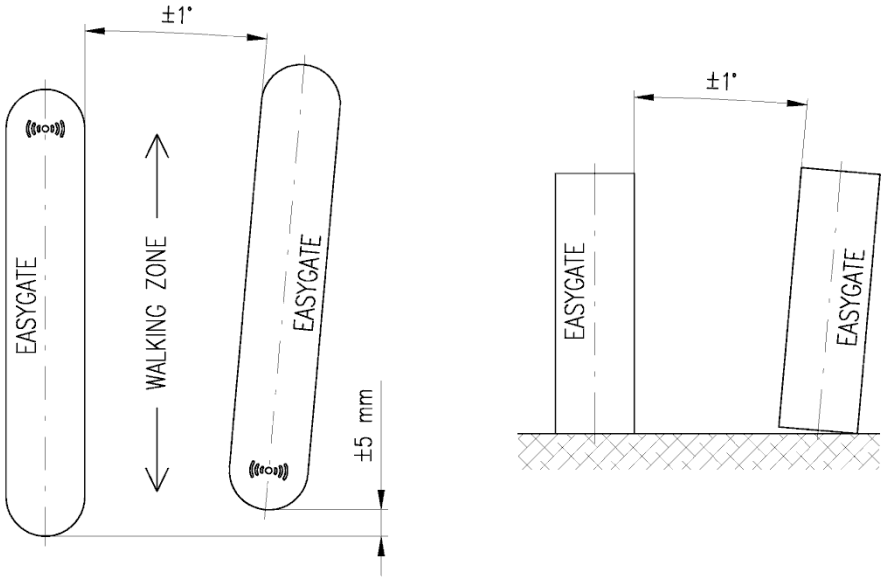
5. Interconnect the MASTER and SLAVE turnstiles using the **X2** (MASTER) and **X3** (SLAVE) terminal blocks.

6. Anchor the turnstile to the floor by M8 anchoring bolts in all anchoring holes.

7. Check the side verticality of the turnstile by using a level.



For the correct functioning of the optical sensors, the turnstiles must be horizontally and vertically aligned within a minimum tolerance.



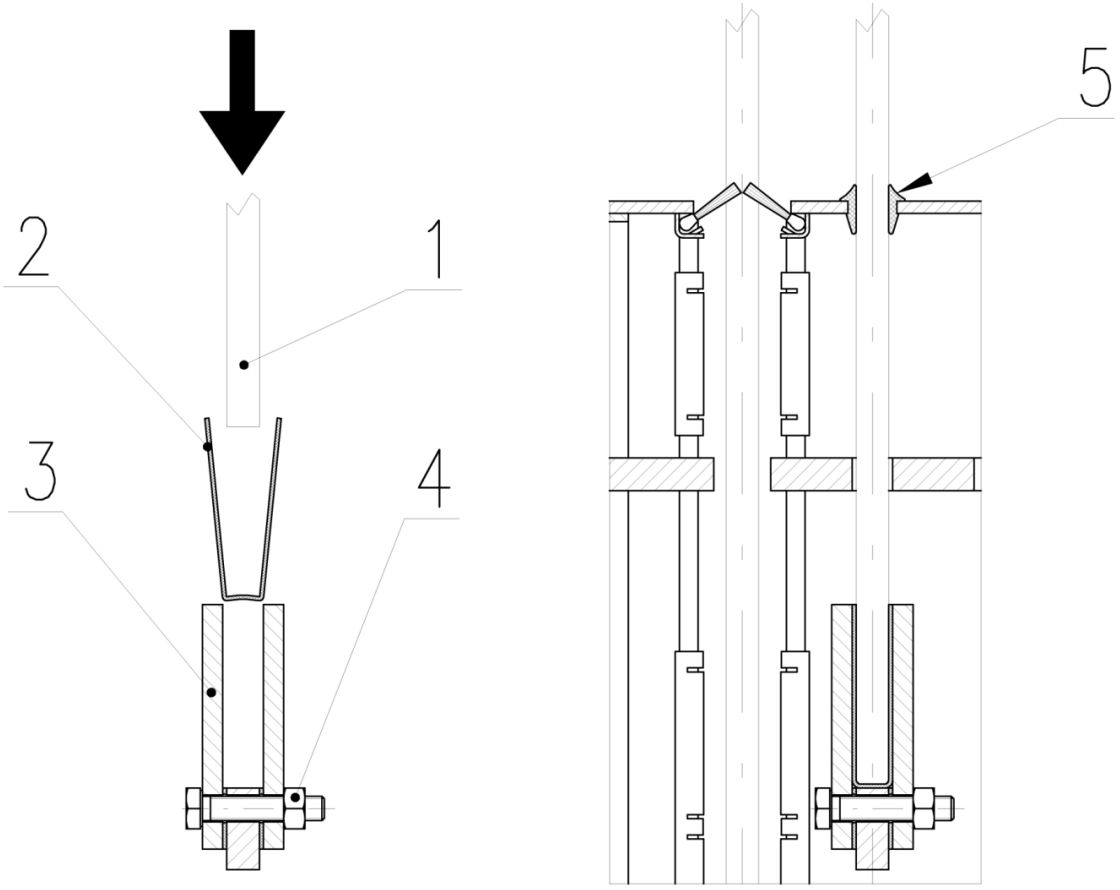
8. Perform the electrical connection in compliance with the chapter *Electrical connection of the turnstile*.
9. If the glass wing is not installed by the manufacturer, install it according to the following chapters.
10. Put the turnstile into operation according to the chapter *Putting the turnstile into operation*.
11. Install the side covers.
12. At the end of the installation, completely clean the turnstile and the external stainless-steel surfaces with specified agent.

All removable side covers are numbered for the given turnstile, and are not interchangeable neither among other turnstiles, nor among each other on the same turnstile. Each cover or a lid has a label on its inner side that contains a unique number for the given turnstile's installation. The same label is located on the turnstile frame in the place where this cover is supposed to be mounted.

3.5.5. MOUNTING OF SOLID GLASS WINGS (EASYGATE-LX and LH)

Loosen the three M6 nuts (pos.4) and spread two shims (pos.3) so that you are able to insert the solid glass wing (pos.1) into the emerged gap. Adjust the supplied rubber (pos.2) into the shape of a small channel and insert it with the solid glass wing into the gap between the shims (pos.3). Gradually tighten the three M6 nuts, by which you grip the glass between the shims. Force two rubber profiles (pos.5) between the glass and the turnstile cabinet.

Turnstiles with upper wing edge height of 940mm do not have solid glass wings.



Dimensions of the rubber (pos.2):

EASYGATE-LX and LH	1x96x290
EASYGATE-LXI and LHI	1x96x470

Length of the rubber profile (pos.5):

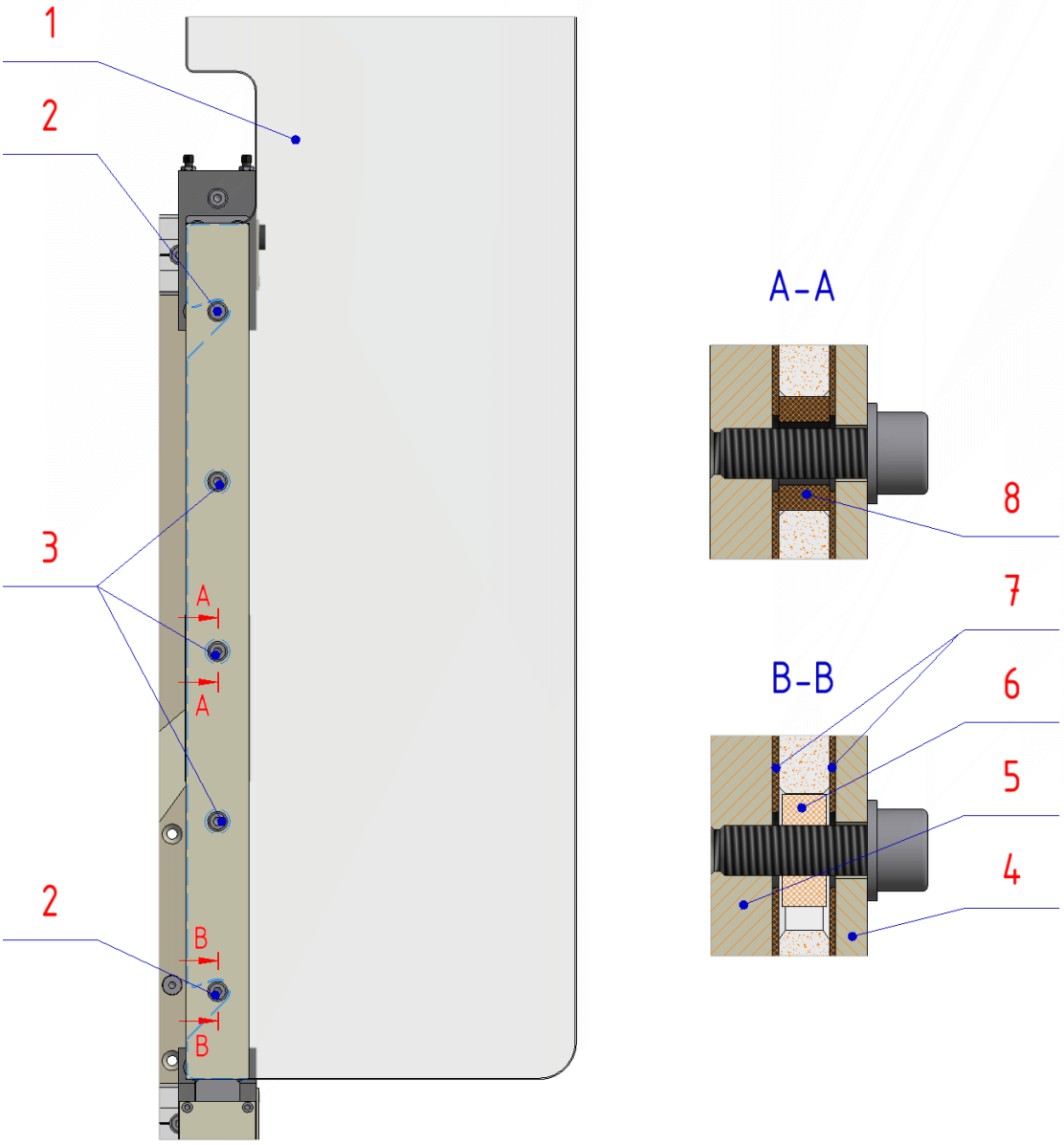
EASYGATE-LX and LH	294mm
EASYGATE-LXI and LHI	474mm

3.5.6. MOUNTING OF MOVABLE GLASS WINGS

The mechanism of linear movement of the glass is secured against transport damages in the upper and lower part by plastic tapes. Remove these tapes before you start installing the movable glass wings.

Before mounting the glass, check if rubbers (pos.7) are affixed to the bearing surfaces, if plastic rings (pos.6) are mounted on two side M8x30 bolts (pos.2), and if rubber rings (pos.8) are inserted in three holes in the middle of the glass wing (pos.1). Completely unbolt the three M8x30 bolts (pos.3), and loosen the two side bolts (pos.2) so that you create an adequate gap to insert the glass between the arm of the glass (pos.5) and the shim (pos.4). Insert the glass wing (pos.1) in the turnstile cabinet between the arm of the glass and the shim so that you don't interfere with the position of small brushes. Tighten two side bolts (pos.2) and secure the wing with three bolts (pos.3).

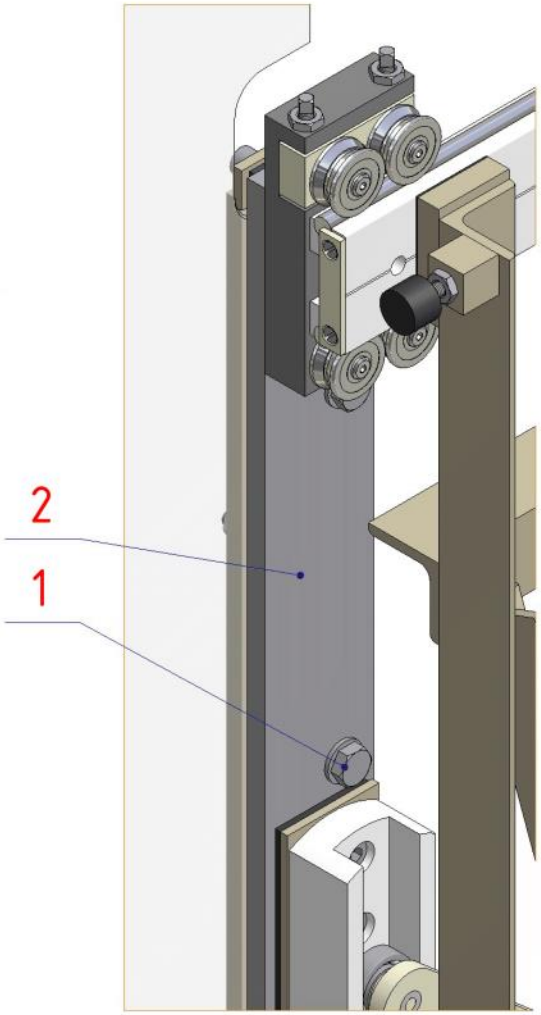
Disassemble the glass in a reverse order. Remove the central bolts (pos.3) and loosen the two side bolts (pos.2). By pushing the glass wing (pos.1) from the side, release the wing from rubbers (pos.7).



There must be no obstructions (e.g. stickers, sanding, etc.) on the turnstile wing where the wing comes into contact with the brushes during movement.

ADJUSTING THE GLASS POSITION:

The bar (pos.2) is fitted with grooves both up and down, which allow the glass holder and thus the movable glass wings to be tilted to a certain extent to achieve the optimum vertical and relative position. The glass can be tilted after unbolting the three M10x20 bolts (pos.1). After finishing mounting the glasses, adjust the small brushes into their correct positions.

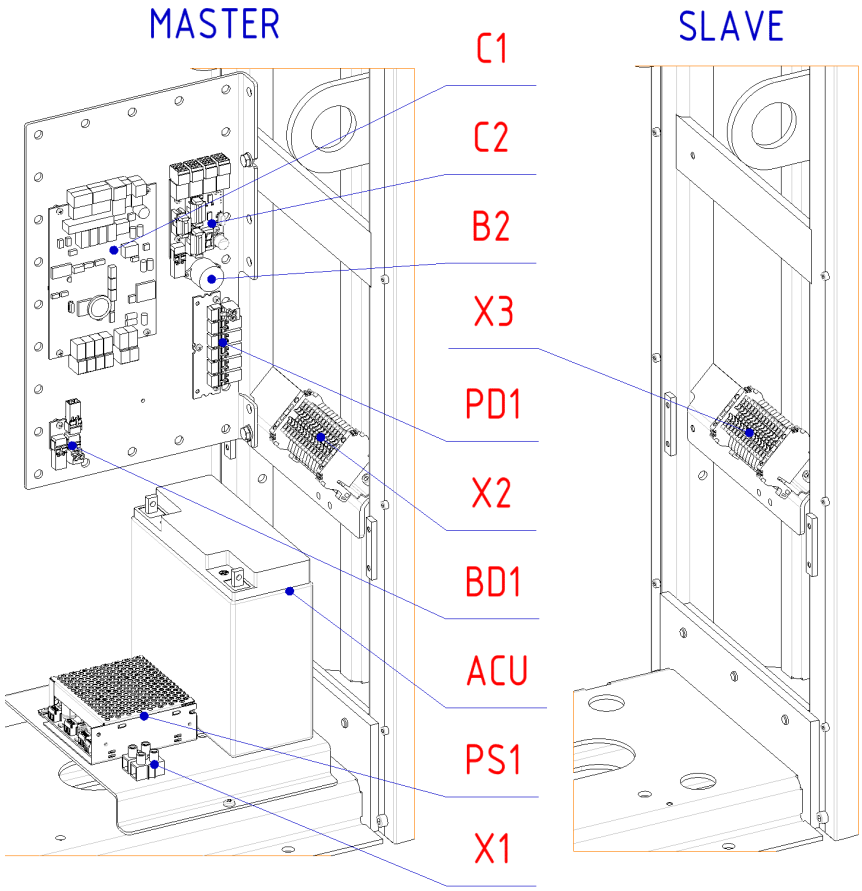


In order to achieve correct functionality of the turnstile, the glass must be centered in relation to the small brushes. Centering is done by moving and underlaying the whole motor drive unit on the turnstile base.

4. ELECTRICAL CONNECTION OF THE TURNSTILE

The electrical installation of the turnstile must always be performed in accordance with approved project documentation!

4.1. LAYOUT OF ELECTRONIC DEVICES AND INTERCONNECTING ELEMENTS



C1 - MLU control electronics
C2 - Control electronics of sensors with integrated RS485 distributor
X1 - Main power terminal block
X2 - MASTER turnstile terminal block
X3 - SLAVE turnstile terminal block
PS1 - SM12 (24VAC/13.8VDC) power supply
ACU - Backup accumulator
PD1 - Power supply distributor
BD1 - Brake power supply distributor
B2 - Buzzer – system alarm

4.2. CONNECTION PROCEDURE

4.2.1. INTERCONNECTING THE MASTER AND SLAVE TURNSTILE.

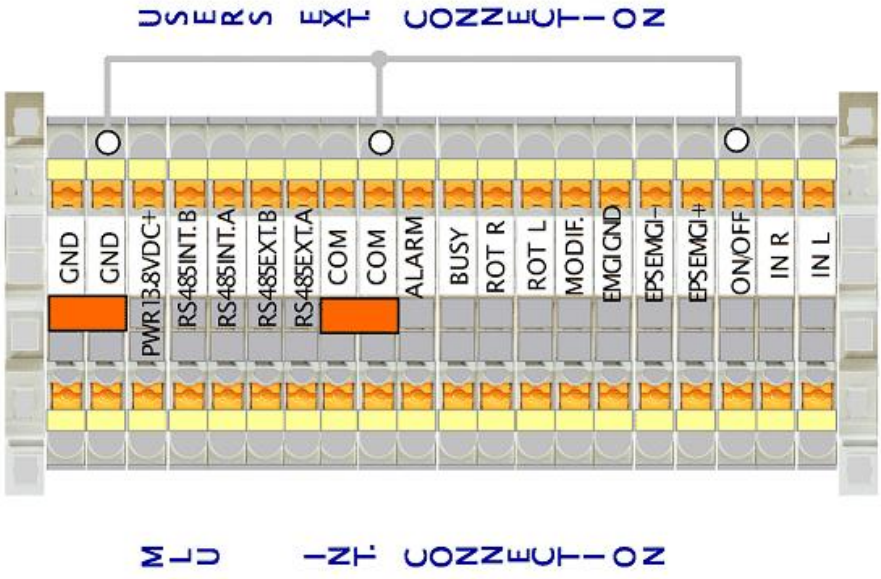
IT IS ALWAYS NECESSARY TO ONLY USE CABLES PROVIDED BY THE COMINFO COMPANY FOR INTERCONNECTING TURNSTILES.

- Connect the supplied four-core Cable **nr. 1** to the **X2** terminal in the **MASTER** turnstile according to the wire colorings in the *Master X2 terminal block* diagram.
- Connect the second end of the cable **nr. 1** to the **X3** terminal in the **SLAVE** turnstile according to the wire colorings in the *Slave X3 terminal block* diagram.
- Connect the supplied multi-core Cable **nr. 2** to the **X2** terminal in the **MASTER** turnstile according to the wire colorings in the *Master X2 terminal block* diagram.
- Connect the second end of the cable **nr. 2** to the **X3** terminal in the **SLAVE** turnstile according to the wire colorings in the *Slave X3 terminal block* diagram.

- Connect the supplied green-yellow wire conductor on the **230V** turnstile to the earthing terminal of the **MASTER** turnstile.
- Connect the second end of the conductor to the earthing terminal of the **SLAVE** turnstile.

4.2.2. CONNECTING THE SUPERIOR CONTROL SYSTEM OF THE TURNSTILE

- All the input and output control signals are routed to the **XU** terminal in the **MASTER** turnstile.



- When performing the connection, follow the *Basic principles of the turnstile control* chapter.

4.2.3. CONNECTING THE POWER SUPPLY

IT IS ALWAYS NECESSARY TO CONNECT THE POWER SUPPLY CABLES WITH DISCONNECTED POWER SUPPLY. IN CASE OF USING THE BACKUP POWER SUPPLY EVEN THE BACKUP POWER SUPPLY MUST BE DISCONNECTED.

The supply voltage must meet all the requirements listed in the *Turnstile power supply* **chapter.**

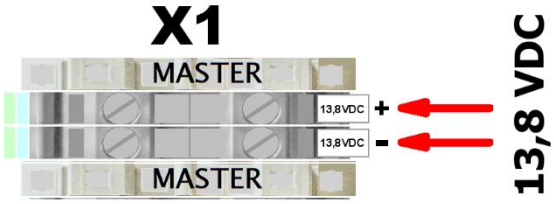
Connection to the mains power supply may only be performed by an authorized person with the appropriate qualifications.

The turnstile is made in three variants of power supply. 13.8VDC / 24VAC /230VAC

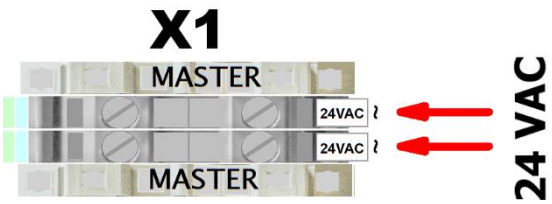
BEFORE CONNECTING THE POWER SUPPLY CABLE, IT IS NECESSARY TO CHECK IF THE SUPPLY VOLTAGE VALUE CORRESPONDS WITH THE VALUE OF THE NOMINAL VOLTAGE ON THE PRODUCTION LABEL AND ADHERE TO THE LISTED POLARITY.

IF YOU USE INCORRECT VALUE OR POLARITY, YOU MAY DAMAGE OR DESTROY THE ELECTRONIC INSTRUMENTS OF THE TURNSTILE AND PUT PEOPLE IN DANGER.

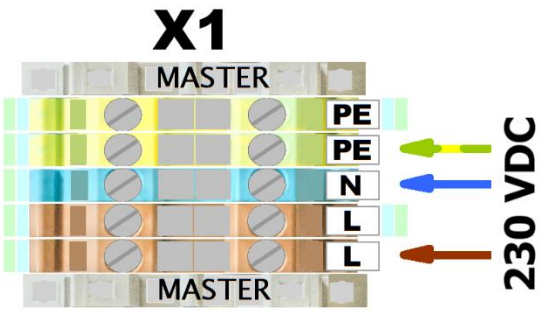
Connect the supply voltage to the **X1** terminal in the MASTER turnstile according to following figures.



Connection of supply voltage in case of using the **13.8VDC** power supply.



Connection of supply voltage in case of using the **24VAC** transformer.



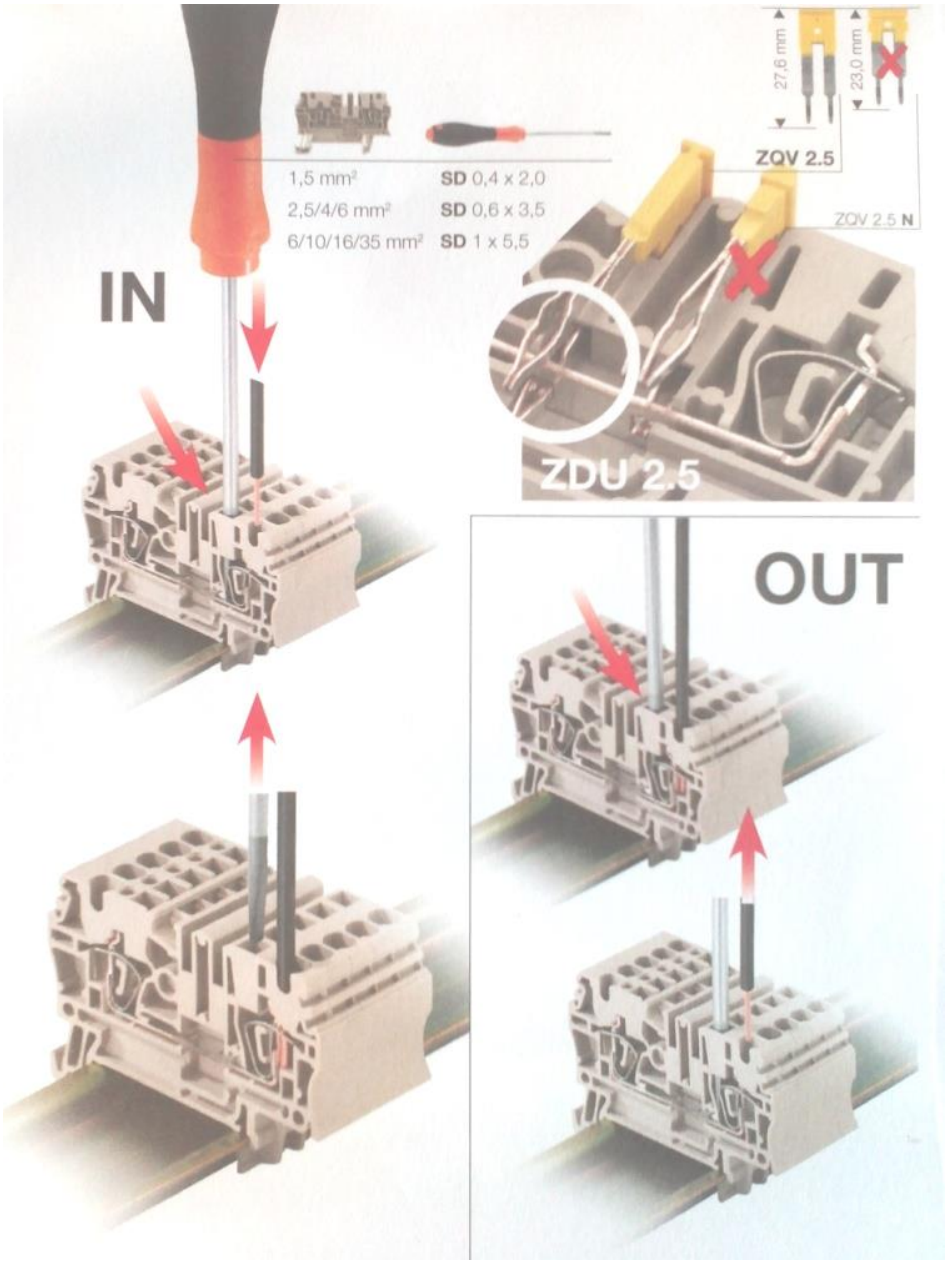
Connection of supply voltage in case of using the **230VAC** mains supply.

4.2.4. DESCRIPTION OF CONNECTION OF TERMINAL BOXES AND CRIMP CONNECTORS

- The wires must be connected so that their insulation is inserted in the terminal recess.
- When inserting the wires without the hollow pin connectors, make sure that all strands of the wire are inserted into the terminal.
- Always check the correct wire connection by pulling.

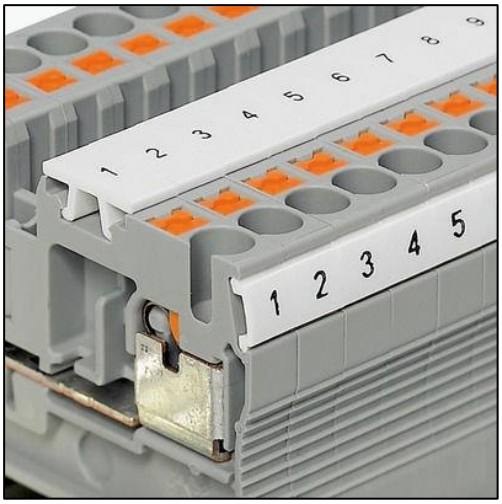
Serial <u>Weidmüller</u> terminal box with flexible clamps:

- The clamp is opened by inserting the 2.5x75 slot screwdriver into the lock as shown on the figure.
- The screwdriver must be used when connecting and disconnecting wires.



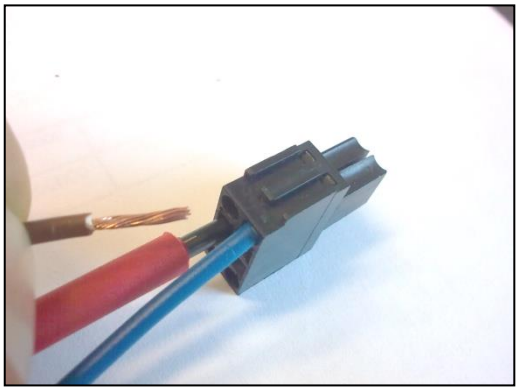
Serial <u>Phoenix</u> terminal box with flexible push-in clamps:

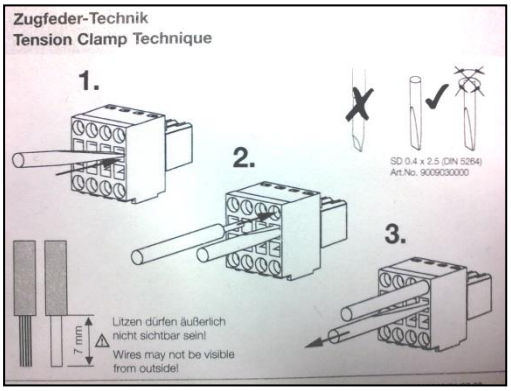
- The clamp enables direct insertion of rigid wires and wires with hollow pin connectors without additional tools.
- When connecting the stranded wires without the hollow pin connector or disconnecting the wires, you can open the clamp by pressing the orange button with any tool as shown on the figure.



<u>Weidmüller</u> connector with flexible clamps:

- The clamp is opened by inserting the 2.5x75 slot screwdriver into the lock as shown on the figure.
- The screwdriver must be used when connecting and disconnecting wires.





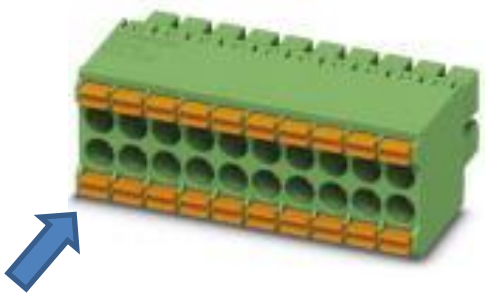
<u>Weidmüller</u> connector with flexible push-in clamps:

- The clamp enables direct insertion of rigid wires and wires with hollow pin connectors without additional tools.
- When connecting the stranded wires without the hollow pin connector or disconnecting the wires, you can open the clamp by pressing the black button with any tool as shown on the figure.

- The connector can only be used if the number of control signals of the MLU5 control electronics needs to be increased.

<u>Phoenix</u> connector with flexible push-in clamps:

- The clamp enables direct insertion of rigid wires and wires with hollow pin connectors without additional tools.
- When connecting the stranded wires without the hollow pin connector or disconnecting the wires, you can open the clamp by pressing the orange button with any tool as shown on the figure.



5. PUTTING THE TURNSTILE INTO OPERATION

After the turnstile has been put into operation, it is recommended to check the mechanical part of the turnstile after one month to see if any parts have become loose. Adjust and tighten loose parts.

5.1. CHECKING THE TURNSTILE BEFORE PUTTING IT INTO OPERATION

- While the power supply voltage is off, check if the wing stoppers were not moved during transport or installation (according to chapter *Checking and adjusting the wing end stoppers*).
- Check that all wires are connected to the appropriate terminals according to the wiring diagram.
- Check that all screw terminals are properly tightened.
- With adequate pulling of the wires check the connection with a spring push-in connector.

5.2. INITIALIZATION OF THE TURNSTILE

Turnstile can only be put into operation by a COMINFO service department employee or worker, who possess the certificate of installation schooling from the COMINFO Company.

When putting the turnstile into operation, initialization of the turnstile takes place after connection of power supply. During the initialization, the turnstile wings slowly move to the stop ends in both directions and then stop in a closed position. It must not be interfered in any way with the turnstile during the initialization procedure.

- The progress of the initialization is indicated on the MLU5 control electronics by the flashing green LED 2 (frequency 4Hz).
- When the initialization is complete, it is signaled by illuminated green LED2.
- The green LED2 will turn off after the first passage through the turnstile.

Initialization occurs whenever the turnstile is connected to the power supply, or when it is lost and restored.

5.3. CHECKING THE ELECTRONICAL COMPONENTS AFTER INITIALIZATION

5.3.1. CHECKING THE ELECTRONICS SIGNALIZATION

All electronical components are equipped with optical signalization of operating states.
If everything is in order, electronical components must signal following state.

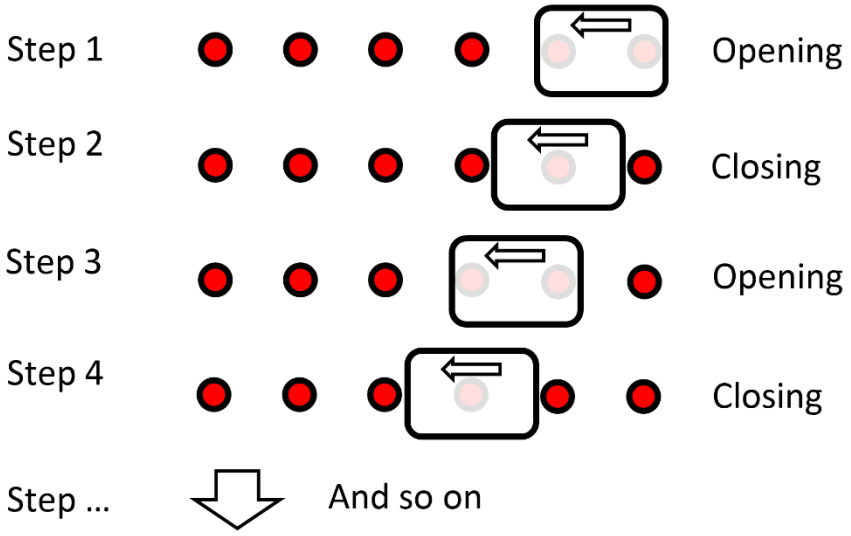
- SM12 power supply (PS1)
  - green power LED is on
- MLU5 control electronics (C1)
  - green power LED is on
- Supercapacitors (SC1)
  - green power LED is on
- SBCB sensors control electronics (C2)
  - 0 is shown on the display
- Control electronics of optical signalization (CLU1 and CLU2)
  - green power LED is on
  - green communication LED is on
- WAV Player
  - green power LED is on
  - red memory card LED is on
  - green communication LED is blinking

If the signaling is different, proceed according to the chapter *Troubleshooting* and relevant electronic manual.

5.3.2. CHECKING THE CORRECT FUNCTION OF THE OPTICAL SENSORS

The turnstile is capable of emergency operation even when individual sensors fail. Therefore, it is necessary to check the correct function of **all** optical sensors according to the following procedure:

- We perform the check after activating the EMERGENCY function based on the following principle.
  - When covering the two adjacent sensors, closing of the turnstile wings is blocked.
  - If only one sensor is covered, the turnstile wings are closing.
  - When the two sensors are covered again, the turnstile wings open again.
- Connect the *Turnstile Tester* according to the following chapter and activate the EMERGENCY function.
- Deactivate the EMERGENCY function and using the identification card consecutively cover the sensors according to the following picture.



- When closing the wings, we have to cover the next pair of sensors before the wings reach the 45° angle.
  Otherwise the wings will close and we have to re-activate the EMERGENCY function.
- We perform the test consecutively on all four sensor bars.
- In case a sensor malfunction is discovered, proceed according to chapter *Troubleshooting - Checking the optical sensors*.

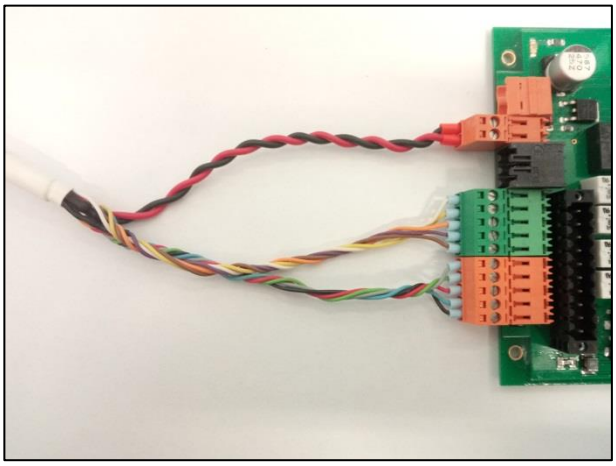
When checking, it is possible to cover transmitter or receiver sensors.

When covering the sensors with the card, we must not cover any other sensor with our hand or other body part.

5.4. TESTING ALL THE TURNSTILE FUNCTIONS

Before connecting the superior system, we will test all the turnstile functions using the *Turnstile Tester* control panel. Usage of the *Turnstile Tester* is described in a separate manual.

Connect the controller connectors to MLU5 electronics according to the colors on the figure:



5.5. ADJUSTING THE TURNSTILE BEHAVIOR TO THE CUSTOMER'S REQUIREMENTS

It is possible to adjust the behavior of the turnstile to the customer's requirements. These settings can be made only by a COMINFO service department employee or worker, who possess the certificate of installation schooling from the COMINFO Company.

The adjustment is done by reconfiguring the parameters using the TCONF application.

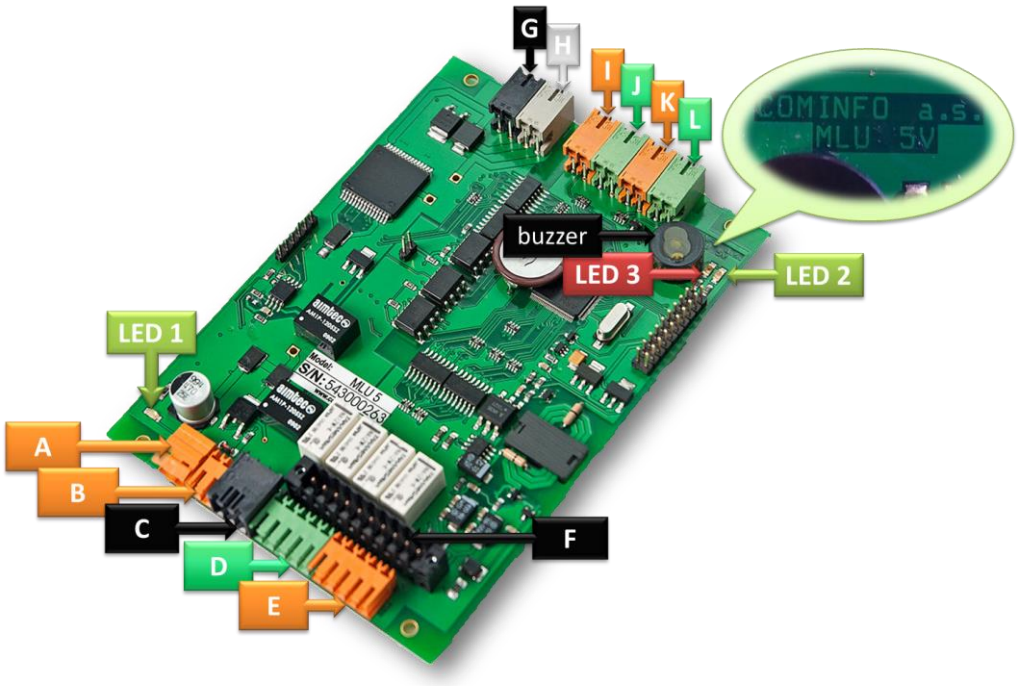
Adjustable parameters are described in detail in the *Instruction Manual***.**

The safety parameters setting may be changed to a level, when turnstile wings can close in case of an attempt for unauthorized passage and injury of authorized and unauthorized persons may be caused! The turnstile owner must be provably notified about this. In such case, the manufacturer shall not be responsible for potential bodily harm and property damage.

We recommend to print out the parameters after the adjustment and have it signed by the customer. The customer is then responsible for any incidents.

6. TURNSTILE CONTROL ELECTRONICS

6.1. DESCRIPTION OF THE CONTROL ELECTRONICS



Description of connectors:

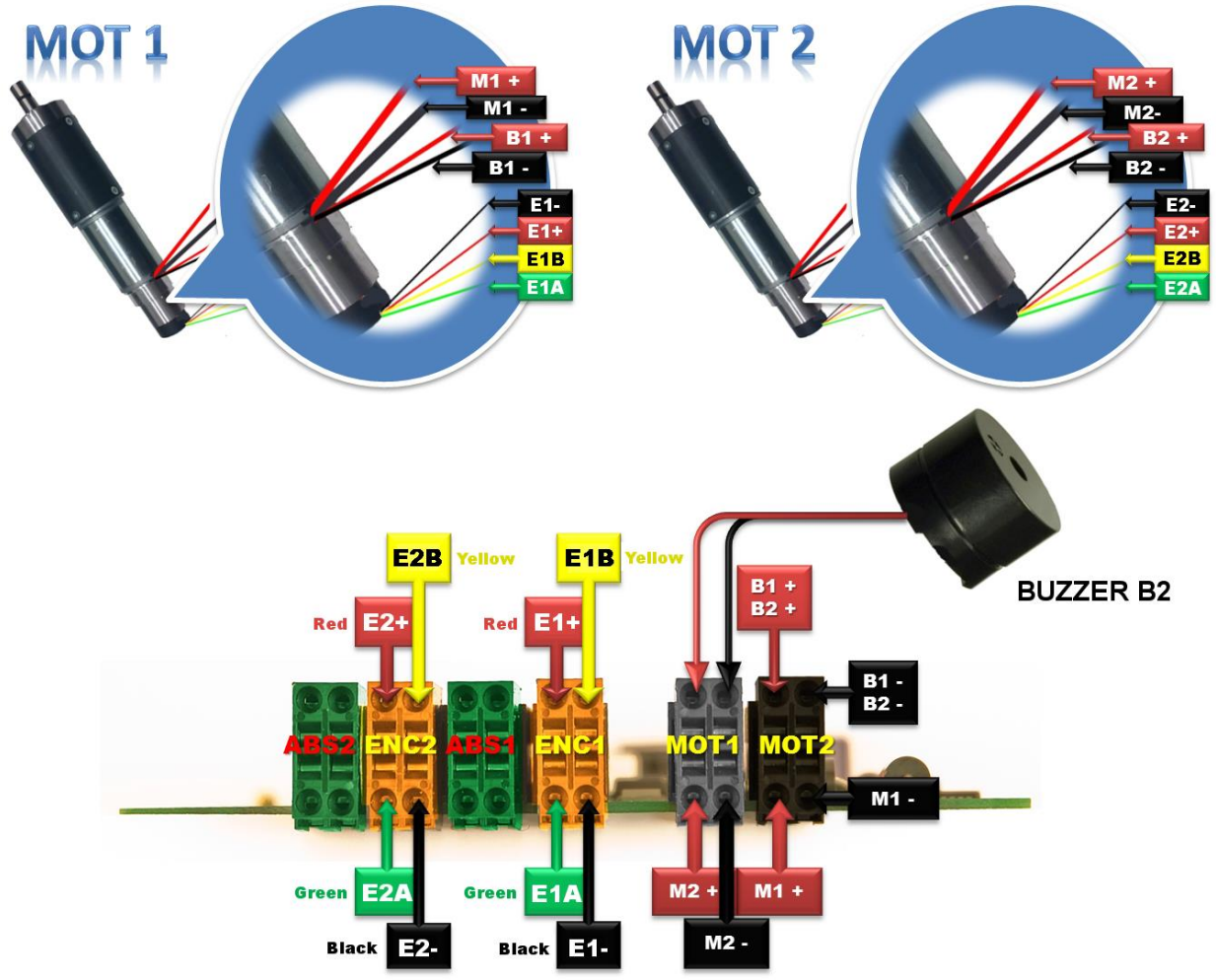
A - 13.8VDC power supply
B - GND for superior system + connection of back-up accumulator for service purposes
C - communication lines RS485 (internal + external)
D - input control signals
E - output information signals
F - expander
G - MASTER motor and brakes of both motors
H - SLAVE motor and **B2** Buzzer
I - MASTER encoder
J - not used – do not connect any circuits
K - SLAVE encoder
L - not used – do not connect any circuits
buzzer - **B1** Buzzer - signaling of operational state

Description of signaling LEDs

LED 1 (green) - signaling of connection of power supply voltage
LED 2 (green) - signaling of statuses
LED 3 (red) - signaling of statuses

When replacing electronics, setting of the new electronics must be checked by the TCONF application before connecting the new electronics to the turnstile. Basic configuration must be set for the **EASYGATE-LX** device type or as **NON-DEFINED** (setting of replacement electronics which are sent for non-defined type of turnstile). If the electronics was defined for another product type, unexpected states could occur after connecting the electronics and turning on the supply voltage. Such unexpected state could result in turnstile damage, burning of the electronics and personnel-safety hazard.

6.1. CONNECTION OF THE POWER PART



The power supply of motor drive units is realized by a pair of thicker cables of red and black colour (**M1 +, M1 -**), or (**M2 +, M2 -**), coming out from the middle part of the motor drive unit. Motor 1 (MASTER) is connected directly to the **MOT2** connector. Motor 2 (SLAVE), which is located in the second half of the turnstile passage gate, is connected to the **MOT1** connector through respective terminals of the **X2** and **X3** terminal blocks.

The pair of the thinner red and black cables (**B1 +, B1 -**), or (**B2 +, B2 -**), coming out from the middle part of the motor drive unit, serve for connecting the electromechanical brake. Respective clamps of the **MOT2** connector, which serve for connecting the brake, are connected to the **BD1** brake distributor. From here, brake of the motor 1 is connected directly, and brake of the motor 2 again through respective terminals of the **X2** and **X3** terminal blocks.

Four thin cables (**E1**), or (**E2**), coming out from the end part of the motor, serve for connecting the motor drive unit encoder. The encoder of motor 1 is connected directly to the **ENC1** connector. The encoder of motor 2 is connected to the **ENC2** connector through respective terminals of the **X2** and **X3** terminal blocks.

The **B2** ALARM buzzer is connected to the **MOT1** connector. The buzzer serves for acoustic alarm signalization when attempt for unauthorized passage occurs.

7. BASIC PRINCIPLES OF THE TURNSTILE CONTROL

7.1. CONNECTION OF INPUTS

7.1.1. POTENTIAL OF INPUT CONTROL SIGNALS

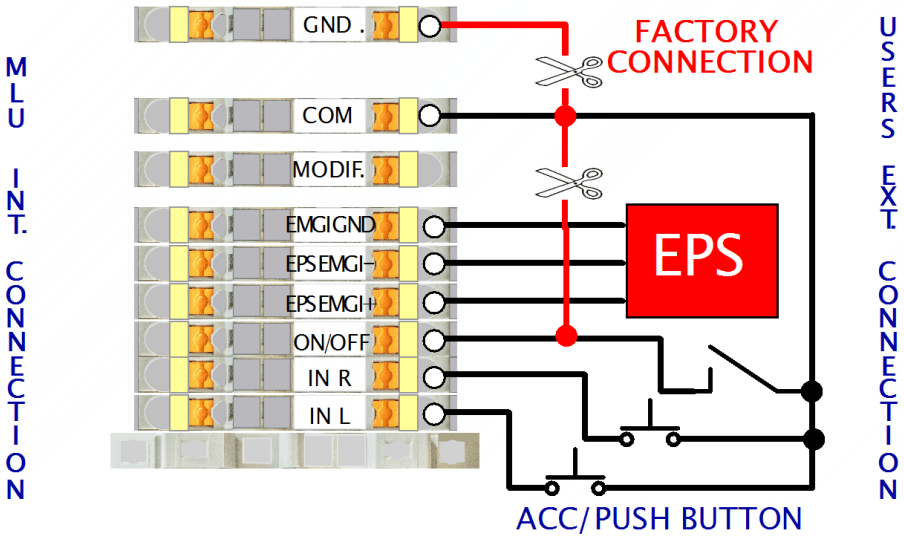
All input control signals are activated / deactivated by their connection to the GND pole of electronics power supply.

The GND potential is not and must not be connected to the machine frame or PE protective circuit.

All inputs must be switched by a contact without external potential. If the superior system uses its potential for outputs, it is necessary to separate the potentials by a relay.

Out of the factory, the GND input potential is interconnected with the common COM output potential. By default, the COM clamp is used to control inputs and outputs. In case the outputs of the superior system use their potential, it is necessary to cancel the connection and use the GND clamp.

7.1.2. DESCRIPTION OF INPUTS



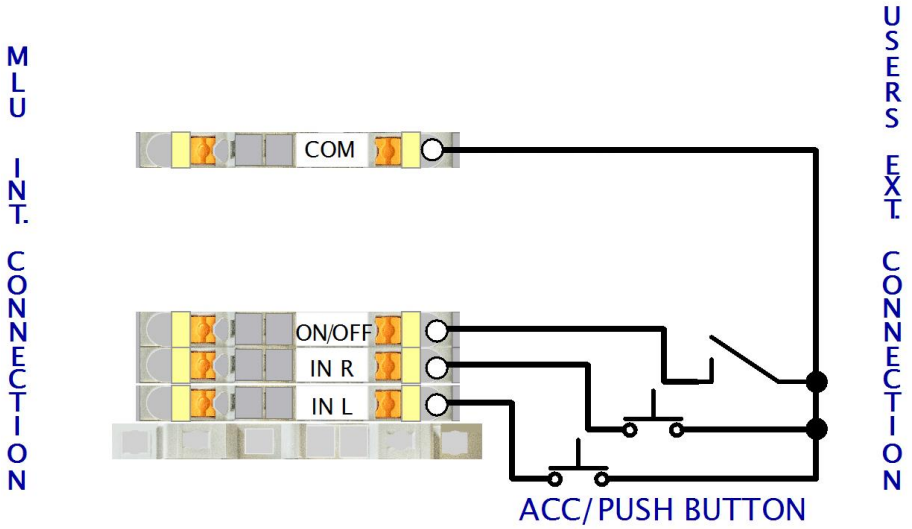
- **MODIF input** - adjustable input for the manufacturer's needs - **DO NOT CONNECT ANY CIRCUITS.**
- **EMGI inputs** - inputs for controlling the EMERGENCY function by the EPS system.
- **ON/OFF input** - input must be activated when controlling the signals connected to INL, INR inputs.

By default, the ON/OFF input is permanently activated by a wire connected to the COM. If it is necessary to control the ON/OFF function by the superior system by using status signals, it is necessary to cancel this connection.

- **INR input** - the input activates single or permanent passage by the turnstile in the INR direction.
- **INL input** - the input activates single or permanent passage by the turnstile in the INL direction.

The input signals are set to NO by the manufacturer. Using the TCONF application it is possible to invert any input to NC, independently to other inputs.

7.1.3. CONTROLLING THE TURNSTILE BY AN EXTERNAL BUTTON

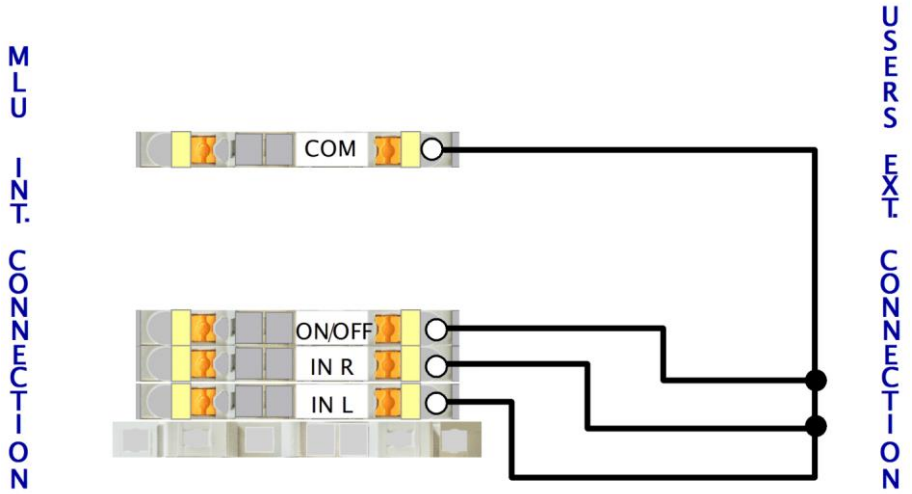


The control signals are connected to the **X2** terminal.
When controlling by the signals on the INL and INR inputs, the ON/OFF input must be activated.

7.1.4. PERMANENT RELEASE IN ONE DIRECTION

Permanent release mode in one direction can be preset in three ways:

1. using the control panel - Touch panel or Easy Touch (see separate manual).
2. using the TMON application (see separate manual)
3. by earthing proper INL or INR input as required (see the figure)



The control signals are connected to the **X2** terminal.

7.1.5. PERMANENT BLOCKING IN ONE DIRECTION

For permanent blocking in one direction, it is necessary to connect the RS485 communication interface, and induce this state via control panel (Touch Panel / Easy Touch) or via the TMON application (see separate manuals).

This state cannot be induced in case of connection where only status signals are used.

7.1.6. EMERGENCY (Emergency state)

The EMERGENCY function is connected using the EMGI module

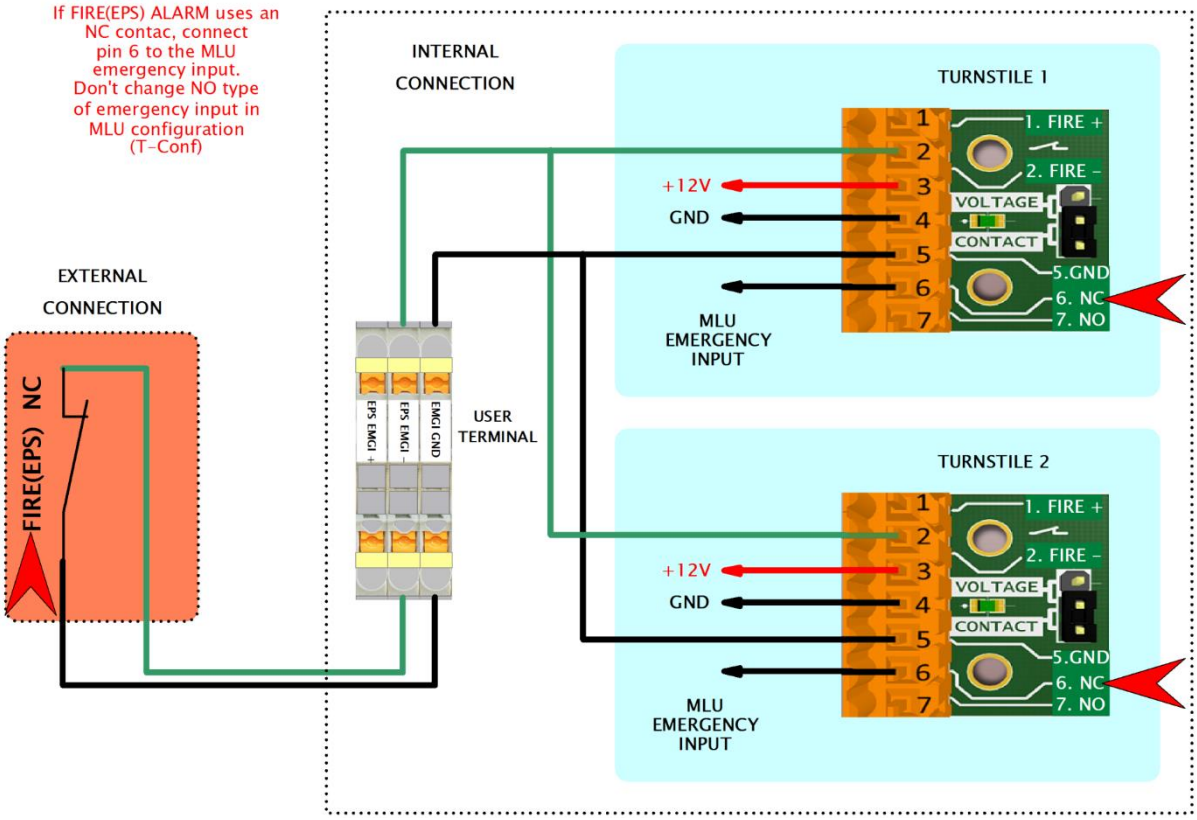
The EMGI module is used for connecting the superior EPS (electronic fire alarm) signal to the COMINFO turnstiles. Using the EMGI module it is possible to connect EPS signal from safety devices (fire detectors) disposing with NO, NC contacts or voltage output up to 24VDC also NO or NC to the turnstiles.

The type of EPS contact (voltage, potential-free) is set on the EMGI module by a jumper. Furthermore, according to the contact switching method (NO, NC), this signal is connected to the MLU5 control unit (from terminal 6 or 7).

All possible wiring options for the EMGI module are described in the following diagrams.

EPS - NC type contact, potential-free

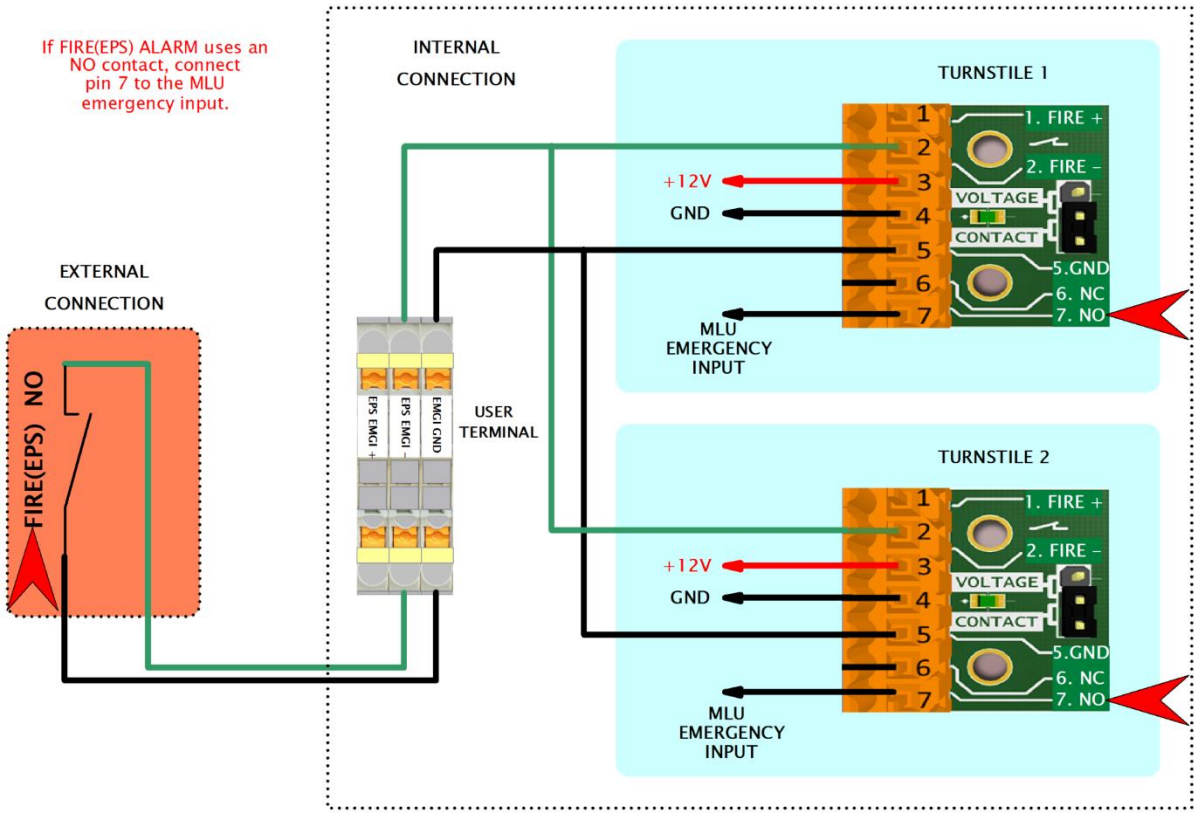
The diagram shows the wiring where the superior EPS system is equipped with a **potential-free NC** contact. The pin #6 on the EMGI module connector is connected with the MLU5 electronics EMERGENCY input. The jumper is set to the position labeled „*CONTACT“.*



The EMERGENCY contact type setting on the MLU5 control unit must remain set to NO.

EPS - NO type contact, potential-free

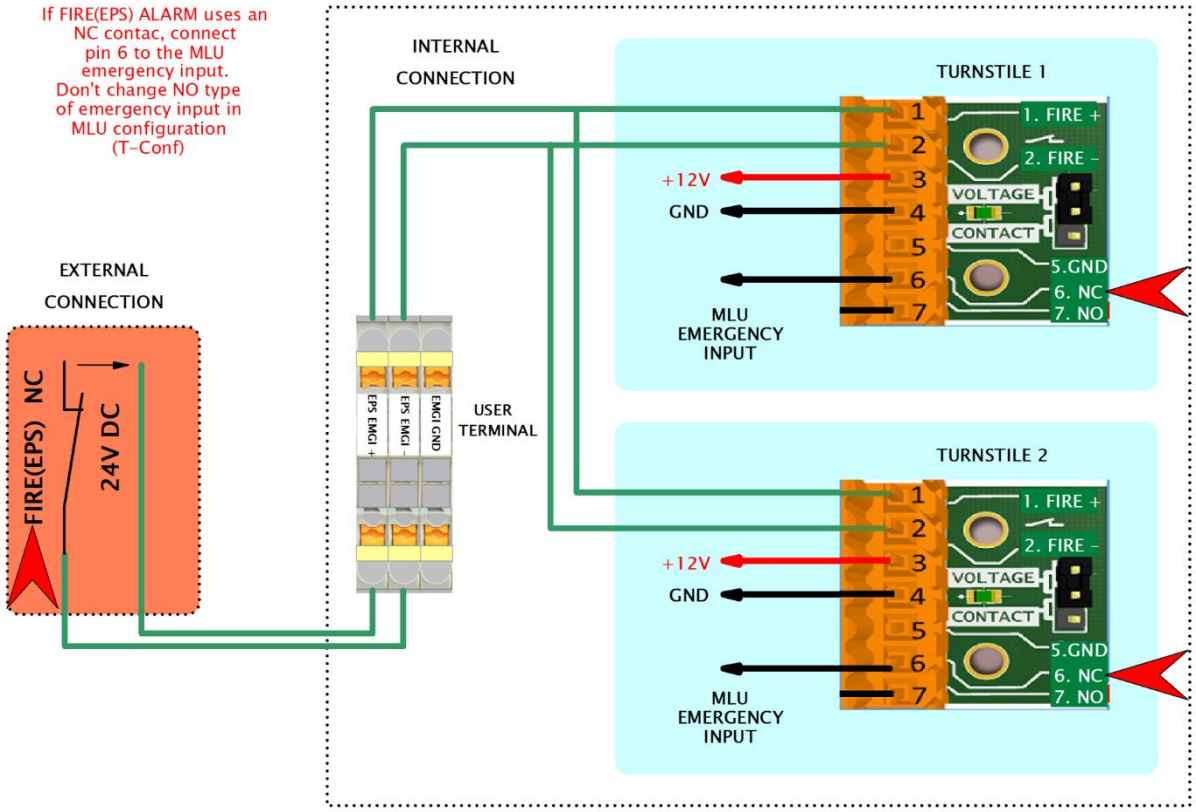
The diagram shows the wiring where the superior EPS system is equipped with a **potential-free NO** contact. The pin #7 on the EMGI module connector is connected with the MLU5 electronics EMERGENCY input. The jumper is set to the position labeled „*CONTACT“.*



The EMERGENCY contact type setting on the MLU5 control unit must remain set to NO.

EPS - NC type contact, 24VDC

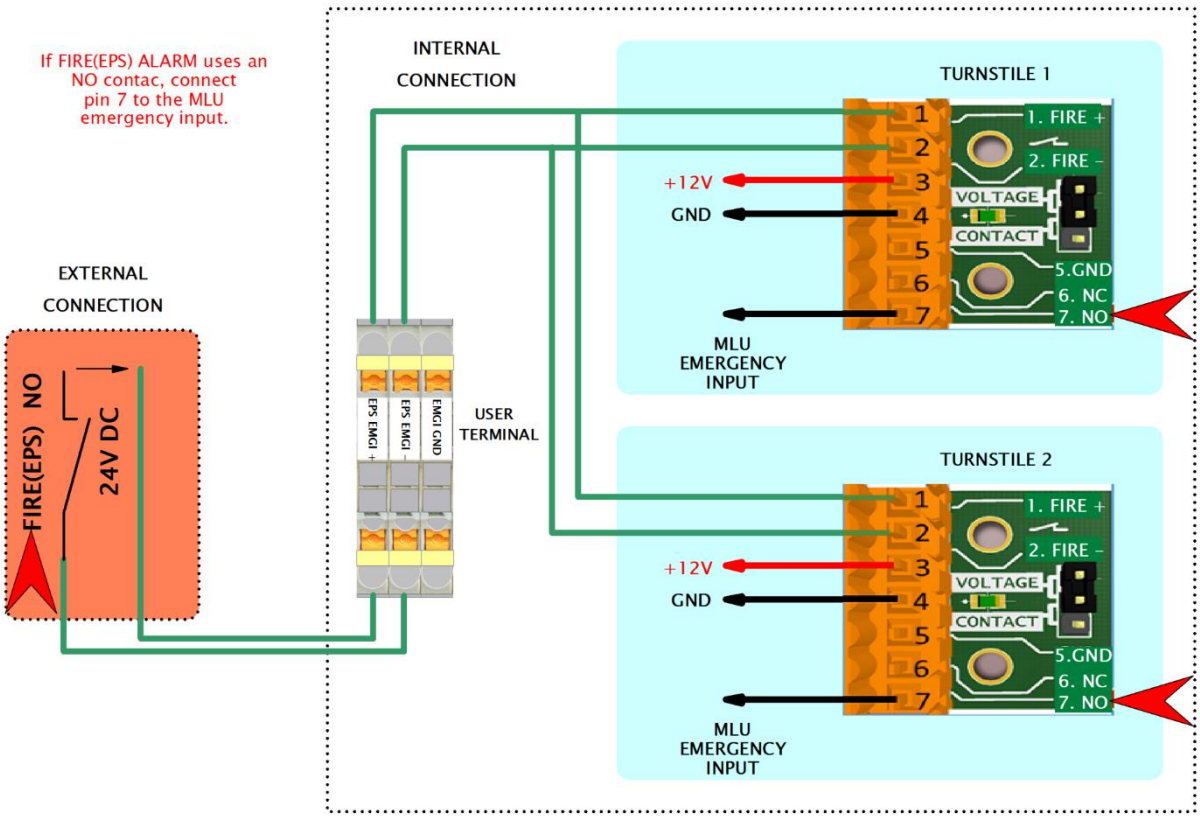
The diagram shows the wiring where the superior EPS system is equipped with a **24VDC NC** contact. The pin #6 on the EMGI module connector is connected with the MLU5 electronics EMERGENCY input. The jumper is set to the position labeled „*VOLTAGE“.*



The EMERGENCY contact type setting on the MLU5 control unit must remain set to NO.

EPS - NO type contact, 24VDC

The diagram shows the wiring where the superior EPS system is equipped with a **24VDC NO** contact. The pin #7 on the EMGI module connector is connected with the MLU5 electronics EMERGENCY input. The jumper is set to the position labeled „*VOLTAGE“.*



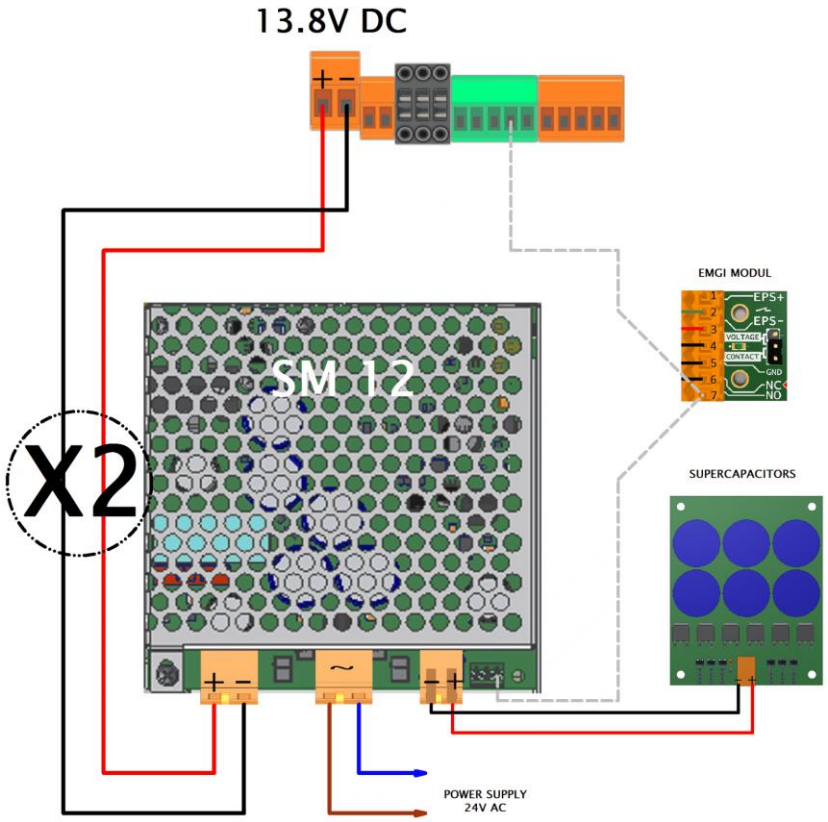
The EMERGENCY contact type setting on the MLU5 control unit must remain set to NO.

7.1.7. ATIVATION OF THE EMERGENCY STATE IN CASE OF LOSS OF POWER VOLTAGE

In case of loss of power voltage, the turnstile can be connected so that it is automatically opened by a backup power supply.

CONNECTION WITH A COMINFO SM12 BACKUP POWER SUPPLY:

The SM12 backup power supply has an output collector which is activated in case of switching to powering by supercapacitors. Clamp O1 of connector K5 of the SM12 backup power supply is connected only to the EMERGENCY electronics input (input 2). It is not necessary to configure MLU5 electronics. After the supply voltage is lost, the turnstile is opened immediately while powered by supercapacitors. When the supply voltage is restored, the turnstile is initialized, after which the wings close to their home position.



CONNECTION WITH BACKUP POWER SUPPLIES BY A THIRD-PARTY MANUFACTURERS:

Connection to third-party power supplies is only possible after consultation with Cominfo Technical Support.

7.2. CONNECTION OF RELAY OUTPUTS

7.2.1. POTENTIAL OF INPUT CONTROL SIGNALS

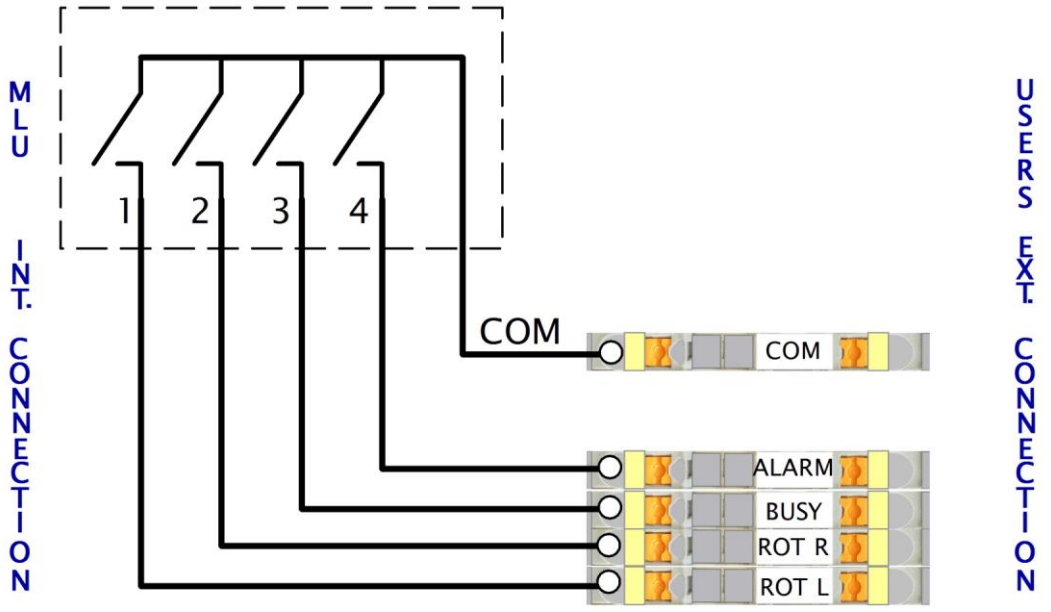
All relay outputs are put to the same COM potential.

Out of the factory, the COM output potential is interconnected with the GND input potential (- electronics power supply pole)

In case the outputs of the superior system use their potential, it is necessary to cancel the connection.

The COM potential is not and must not be connected to the machine frame or PE protective circuit.

7.2.2. DESCRIPTION OF INPUTS



- **ROT L** signal for the superior system informing about opening of the passage in the L direction
- **ROT R** signal for the superior system informing about opening of the passage in the R direction
- **BUSY** signal for the superior system informing about released or ongoing passage
- **ALARM** attempt for an unauthorized passage

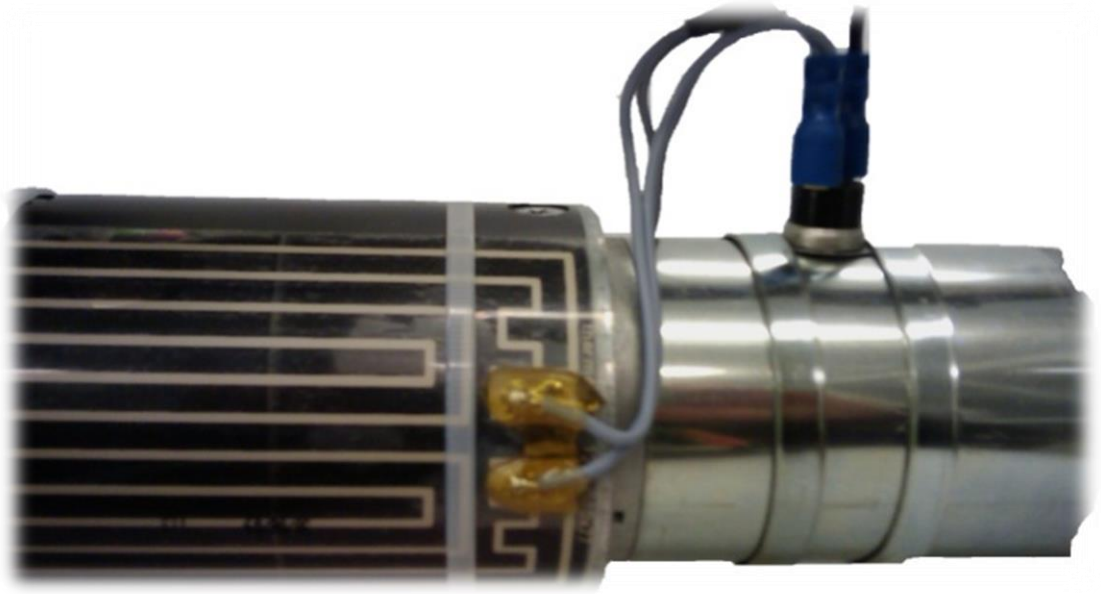
Output signals are connected via the **X2** terminal block to the clamps marked the same way as the clamps of electronics.

The output signals are set to NO by the manufacturer. Using the TCONF application it is possible to invert any output to NC, independently to other outputs.

Maximum load of individual outputs is 30VDC / 0.5A.

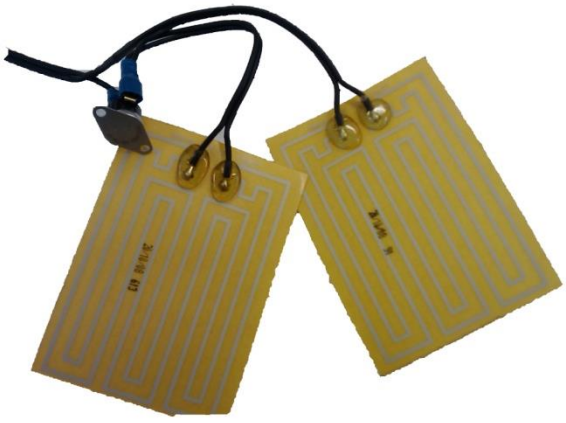
7.3. HEATING SYSTEM

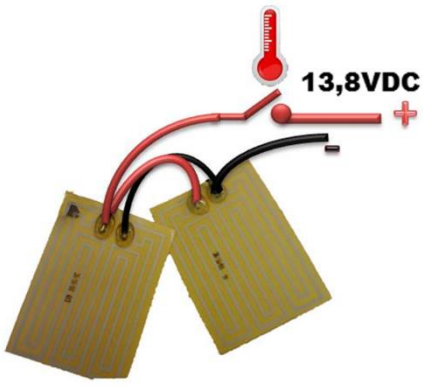
Turnstile may be equipped with additional heating. This optional accessory enables the turnstile to operate up to the minimum temperature of **-25°C**. Switching is done through an encapsulated mechanical thermostat that is mounted on the motor. The thermostat switches on when temperatures drop below **+15°C** and switches off when temperatures reach **+21°C**.



Heating system with 13.8VDC external power supply:

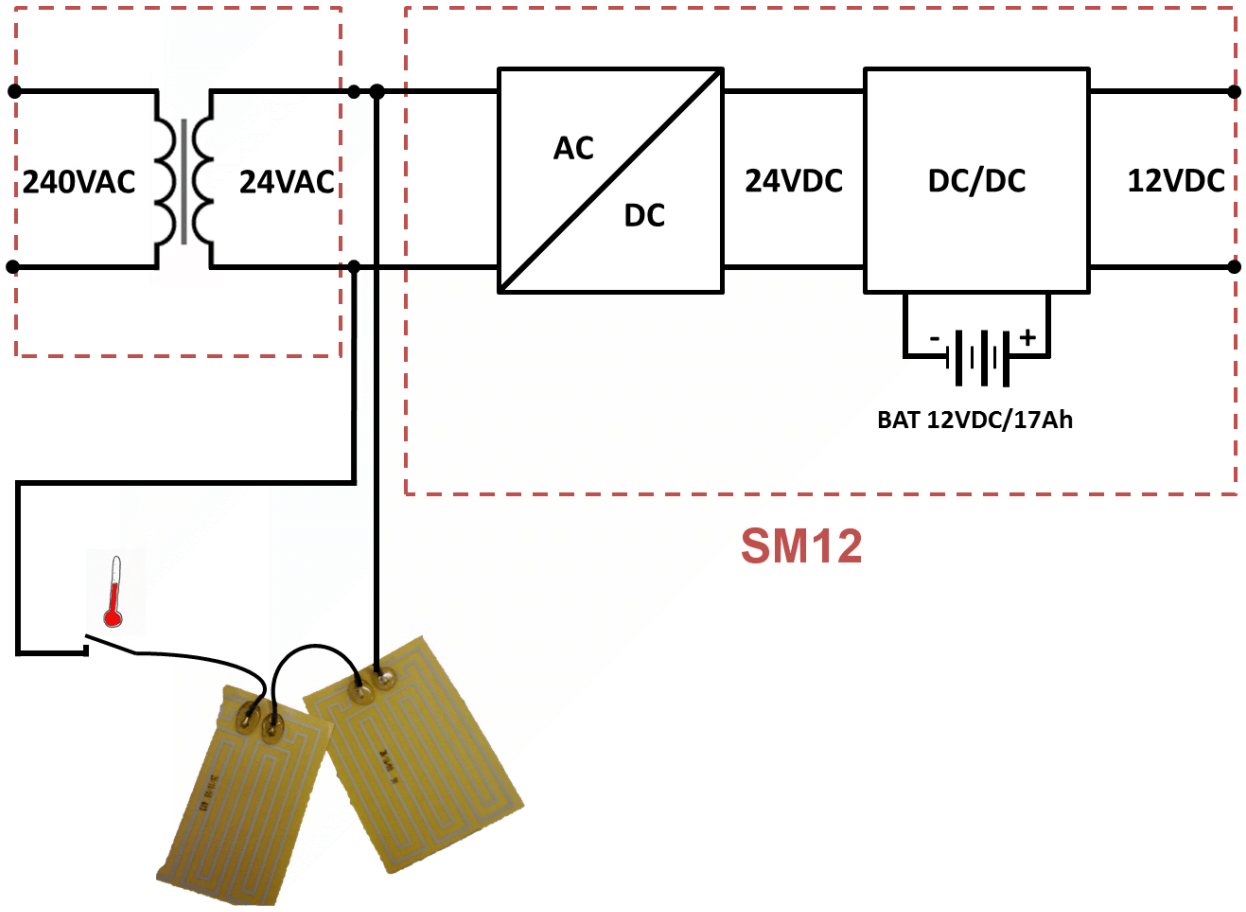
Heating foils are mutually connected in parallel. Heating is connected directly to the power connector of the control electronics, or to the terminal box located in the turnstile.





Heating system with 24VAC external power supply:

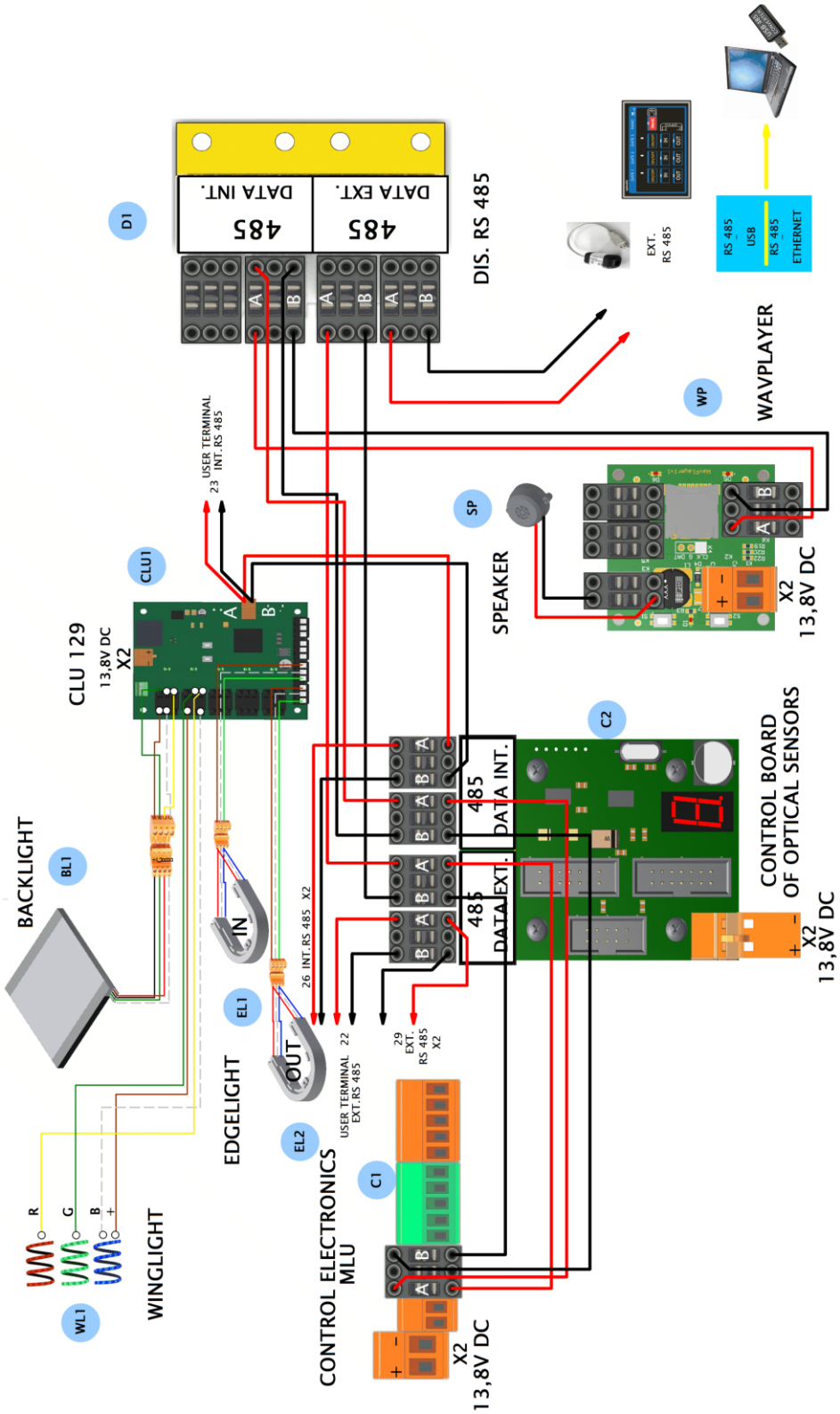
Heating foils are mutually connected in series. Heating is connected to the input clamps of the SM12 power supply located in the turnstile.



7.4. CONNECTING THE RS485 COMMUNICATION LINES

Control electronics is equipped with two RS485 communication channels.

7.4.1. INTERNAL COMMUNICATION LINE



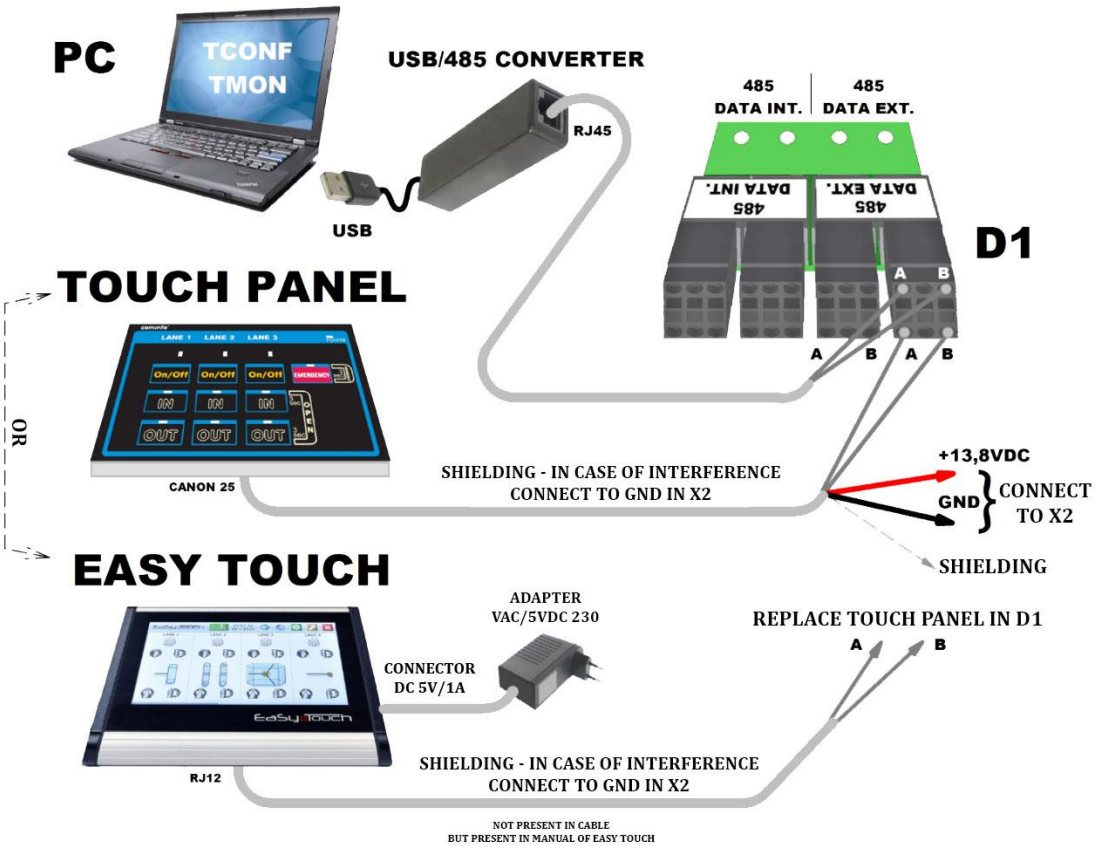
- **DATA INT.** serves for connection the SBCB, Wav Player, CLU and other peripheries.

Connection of shielding on internal devices of the DATA INT. channel:

In case of internal devices such as SBCB drive, Access Light, Lane Light, Signal Light, Wav Player, CLU, do not connect the shielding MASTER-SLAVE interconnecting cable. In case of big interference of the MASTER-SLAVE interconnecting cable, connect shielding only on the MLU5 electronics.

7.4.2. EXTERNAL COMMUNICATION LINE

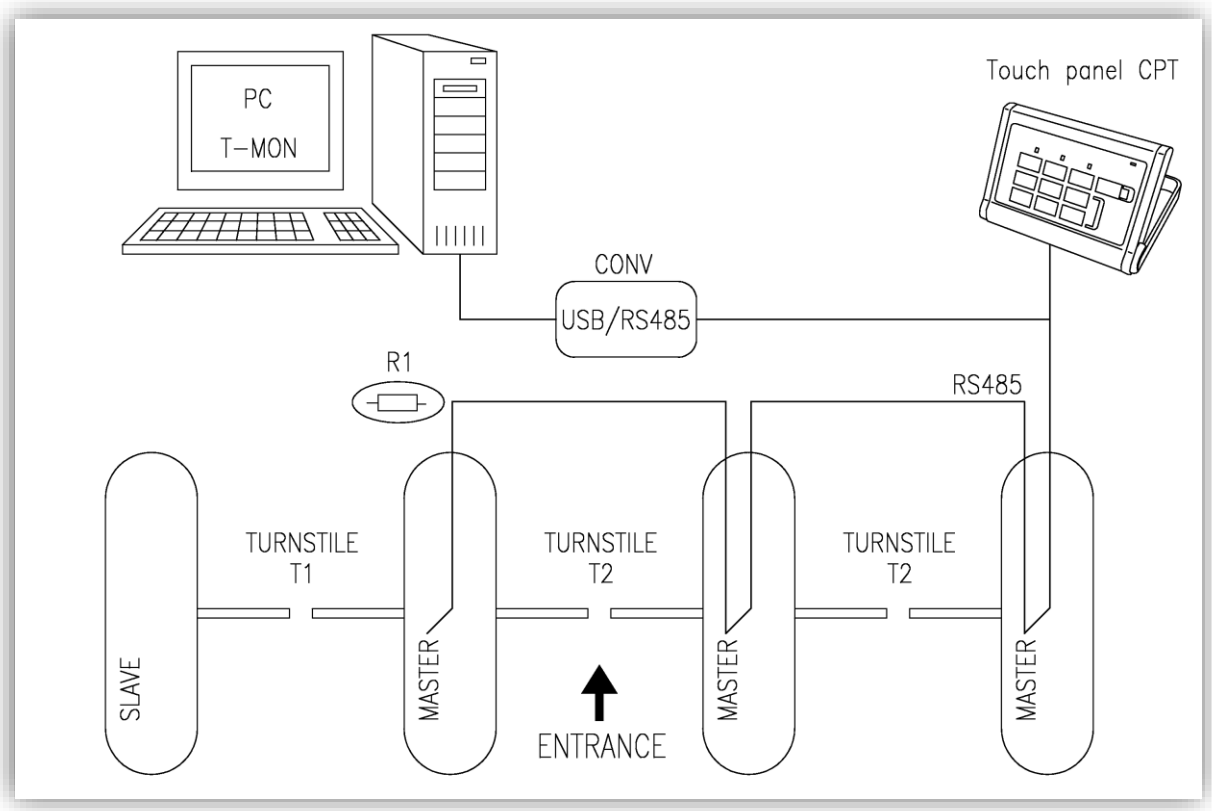
To ensure a reliable PC connection via RS485-USB converter or RS485 Ethernet, it is necessary to use the converter supplied by the COMINFO company. Correct functioning is not guaranteed if different converter is used.



- **DATA EXT.** serves for PC connection via RS485-USB or RS485 Ethernet and also for connection of control panel (Touch Panel / Easy Touch).

For easy change of configuration, the firmware upgrade and control via PC it is advisable to lead the external RS485 communication line to an accessible place outside the turnstile.

Connection of terminating resistor of external communication line RS485:



The connection of PC, Touch panel and turnstiles via the RS485 line is shown of the figure.

- Typically, only R1 terminating resistor is connected to the T1 turnstile at the end of the line.
- At the beginning of the line, the terminating resistor is connected to the CONV converter.
- Resistors that ensure idle state of the line are also placed in the CONV converter.
- If the CONV converter is disconnected, the resistors for defining the idle state and the terminating resistor must be set by means of the DIP-Switch in the Touch panel.
- When replacing the MLU5 control electronics in the T1 turnstile, it is necessary to set the terminating resistor also on the MLU5 electronics.

For more detailed information, request a separate manual: *RS485 Connection Principles*.

Shielding connection of external devices of the DATA EXT. channel:

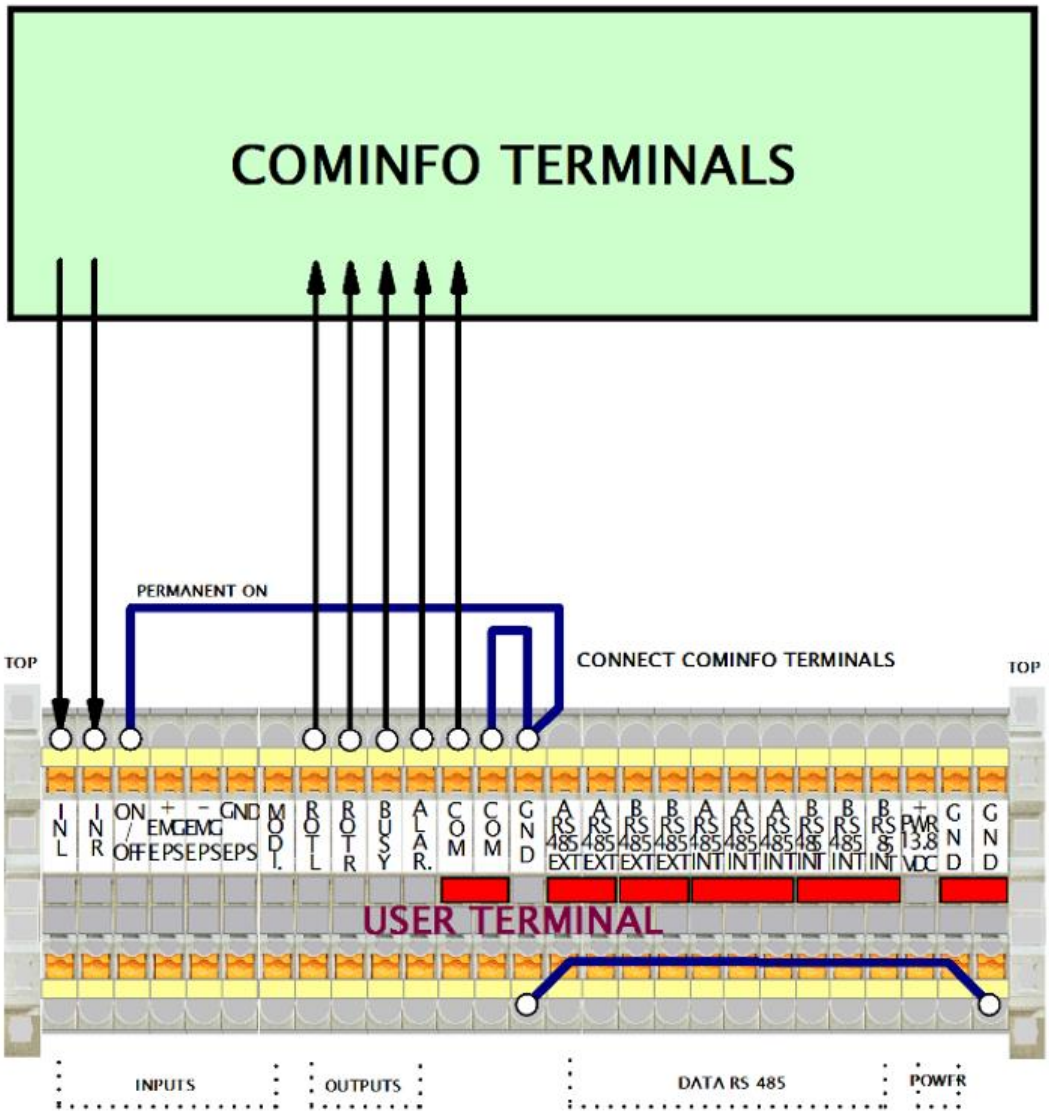
In case of the external Touch Panel device, always connect the shielding to the MLU5 electronics in the turnstile that powers the Touch panel. In case of external 485/USB converter device, do not connect the shielding for PC control. In case of major interference of the cable leading to the 485/USB converter, connect the shielding only to the MLU5 electronics.

8. TURNSTILE CONTROL BY SUPERIOR SYSTEM

8.1. CONNECTION FOR CONTROLING WITH SUPERIOR SYSTEM FROM COMINFO

The superior systems from COMINFO are powered by the turnstile power supply SM12 (the turnstile and superior system have common potential).

- **The potential of input control signals GND is connected with the common potential of output control signals COM. The connection is done through a connecting wire on the XU terminal.**
- **The COM terminal is used to control the input and output control signals.**
- **The input control signal ON/OFF is permanently activated through an interconnecting wire.**



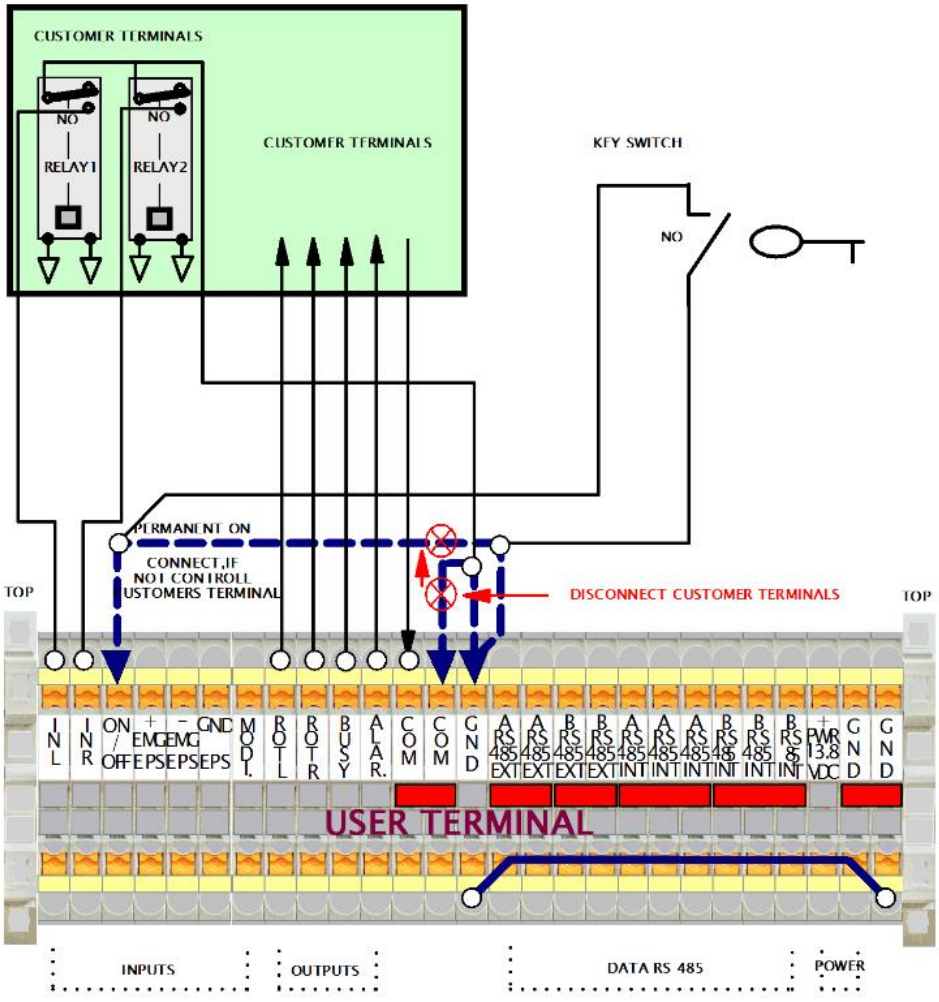
MLU INT. CONNECTION

8.2. CONNECTION FOR CONTROLING WITH SUPERIOR SYSTEM FROM THIRD-PARTY MANUFACTURERS

The superior system from a different manufacturer must not be powered by the turnstile power supply SM12**(the turnstile and superior system have different potential).**

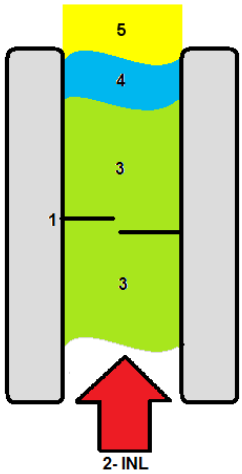
- **The potential of input control signals GND and output control signals COM must be disconnected by removing the interconnecting wire on the XU terminal.**
- **Input control signals with own potential must be connected through a relay.**
- **To control input signals through a relay you must use the GND terminal.**
- **If the turnstile shutdown function with KEY SWITCH controller will be used, remove the connecting wire between GND and ON/OFF.**
- **The COM terminal must be used to control output signals with own potential.**

CUSTOMERS



MLU INT. CONNECTION

8.3. DURATION OF INPUT AND OUTPUT SIGNALS



1. Home position – device is waiting for passage permission (INL, INR input activation)
2. Input activation – passage permitted
3. Phase of the passage - person in the corridor
4. Counting of passing person
5. Phase of finishing to the home position

Input signals duration:

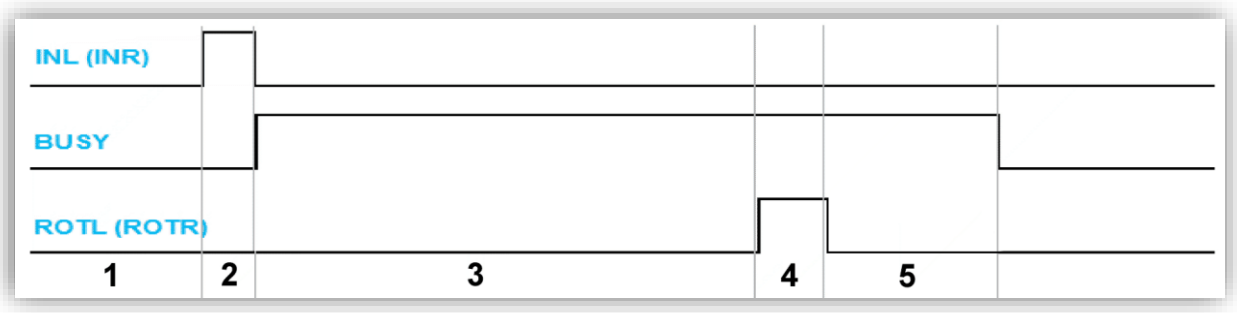
Name of the Input Signal	Single Passage	Permanent Passage
INL	>100ms <2000ms)[1]	>2000ms
INR	>100ms <2000ms)[1]	>2000ms
ON/OFF	FOR THE DURATION OF THE INPUT ACTIVATION	
EMERGENCY (emergency state)	FOR THE DURATION OF THE INPUT ACTIVATION	

)[1] - **Recommended length of the input signal is 1000ms**

Output signals duration:

Name of the Output Signal	Signal Duration
ROTL	>200ms
ROTR	>200ms
BUSY	FOR THE DURATION OF PASSAGE

Progress chart of passage through the turnstile:



9. DESRIPTION OF REMOTE CONTROLING OF THE TURNSTILE

It is possible to control the turnstile simultaneously by all available control systems.

- **The turnstile controlled by status signals through a superior system can be simultaneously controlled by COMINFO products from any location through external communication line RS 485.**
- **Apart from the superior system, also TOUCH PANEL, EASYTOUCH and computers with the T-MONITOR application can be simultaneously connected.**
- **All these control systems display statuses independently triggered by any of them.**
- **Information on statuses triggered by any of these devices are sent to the superior system by the MLU5 electronics by status signals.**

9.1. CONTROLLING THE TURNSTILE BY THE TOUCH PANEL

- It is a simple control panel with capacitive buttons and LED signalization.
- You can control 3 turnstiles with the EMERGENCY function or 4 turnstiles without this function with one TOUCH PANEL.
- In case you need to control more turnstiles from one location, it is possible to use more TOUCH PANELS.
- Setting the TOUCH PANEL is done through the T-CONF application.
- Connection and setting of the TOUCH PANEL is described in a separate manual.

9.2. CONTROLLING THE TURNSTILE BY THE EASY TOUCH PANEL

- It is a comfortable control panel with a touch screen and plenty of functions.
- You can control up to 30 turnstiles with one EASY TOUCH.
- Computer is not needed for setting the EASY TOUCH - it is done directly on the touch screen.
- Connection and setting of the EASY TOUCH is described in a separate manual.

9.3. CONTROLLING THE TURNSTILE BY T-MONITOR APPLICATION

- It is a highest level of controlling the COMINFO turnstiles, it allows not only controlling but also monitoring of statuses and automatic control of the turnstiles with the PASSAGE SCHEDULER.
- You can control unlimited number of turnstiles with the T-MONITOR application.
- The T-MONITOR application is described in a separate manual.

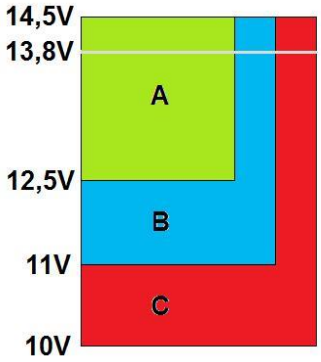
10. TURNSTILE POWER SUPPLY

Internal power supply of the turnstiles is not intended for external devices (third party devices), unless it is specified in the project documentation and this device is installed directly by the manufacturer.

10.1. CONNECTION OF EXTERNAL 13.8VDC POWER SUPPLY

THE POWER SUPPLY UNIT MUST COMPLY WITH THE REQUIREMENTS OF THE SELV POWER NETWORK.

THE POWER SUPPLY MUST BE DIMENSIONED ACCORDING TO THE CHAPTER *POWER INPUT OF THE TURNSTILE***.**



14.5VDC Absolute maximum of power supply voltage - normal device functioning without limitations (this limit must not be exceeded).

13.8VDC **Standard power supply voltage** - normal device functioning without limitations.

12.5VDC Lower limit of standard power supply voltage - normal device functioning without limitations (the manufacturer does not recommend device operation with lower power voltage).

11VDC Low power supply voltage - normal device functioning (except for starting-up of initialization, which, with this level of power voltage, ends up with an error message and device non-functionality).

10VDC Minimum power supply voltage - device may show signs of a very low level of power supply (incoherent operation, very slow reactions, stopping, inability to perform the emergency function etc.).

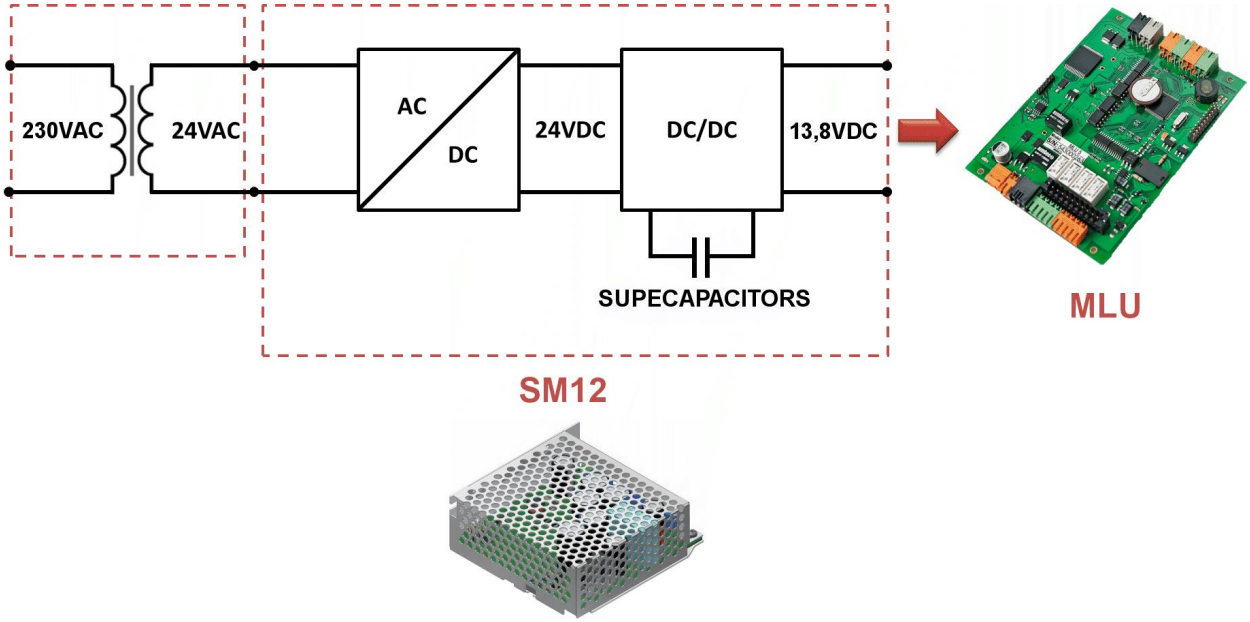
EASYGATE-LX/LH/FL/FH turnstiles fall into the **A** area of permitted range of power supply voltage.

10.2. CONNECTION OF THE EXTERNAL POWER SUPPLY 24VAC/50-60Hz

The turnstile may be delivered also in a version for 24VAC power supply from external transformer located in the distributor. In this case, the main 230VAC/24VAC transformer is supplied in compliance with the type and number of connected turnstiles in different performance-related versions. The output from the SM12 source is voltage of 13.8VDC. Supercapacitors may be connected to this source. 24VAC voltage is connected to the main terminal block **X1**.

THE TRANSFORMER MUST COMPLY WITH THE REQUIREMENTS OF THE SELV POWER NETWORK

Block diagram:



Each turnstile must have its separate circuit breakers, described in the following chapters

10.2.1. PROTECTION OF THE SM12 POWER SUPPLIES FOR TWO AND MORE TURNSTILES

CONNECTION WITHOUT COMMON GND POTENTIAL

This connection may be used in case of installation of more turnstiles if the superior system does not require setting the turnstiles under a common GND potential for control purposes.

In case of a failure, unipolar disconnection from the SM12 power supply takes place.

In case of unipolar protection, power sources may not be set under the same GND potential.

The superior system must control turnstile by means of a relay with independent contacts in a way so that each turnstile is controlled by a GND system from its own SM12 power supply.

Circuit diagram:

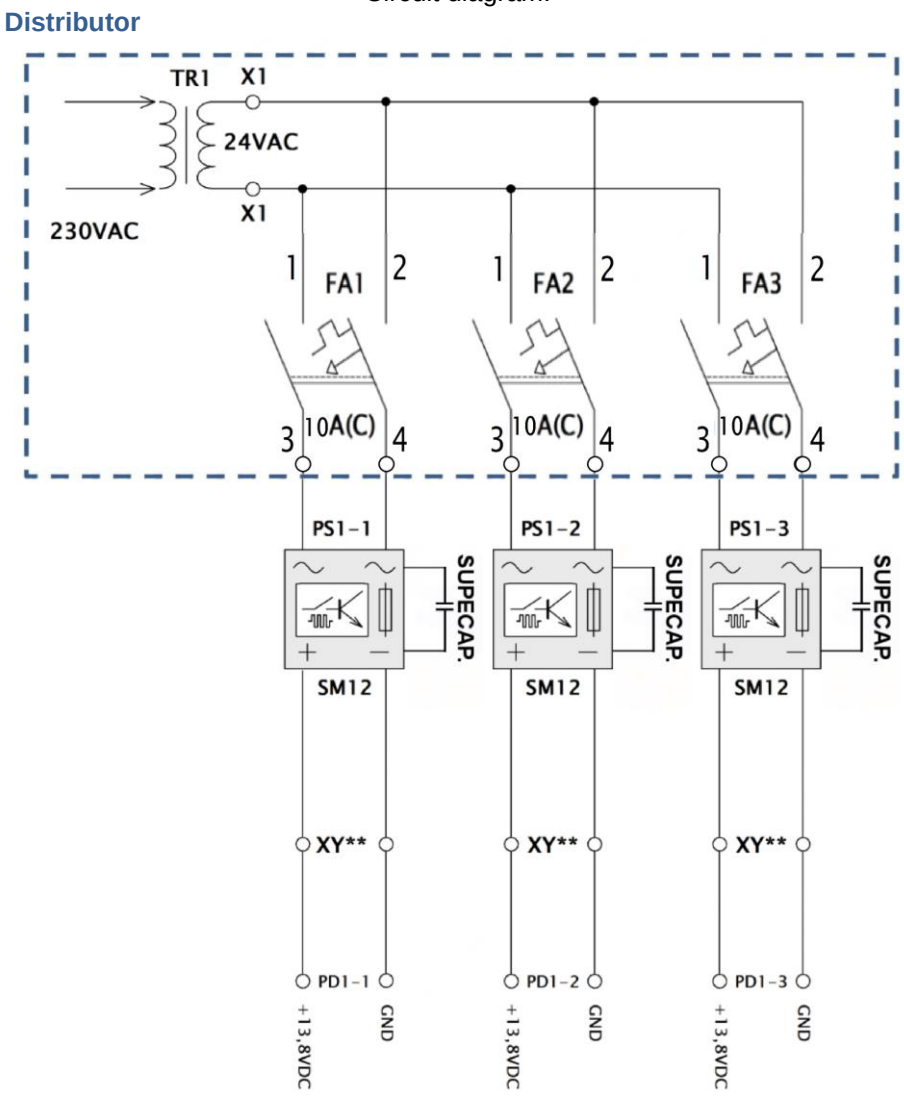
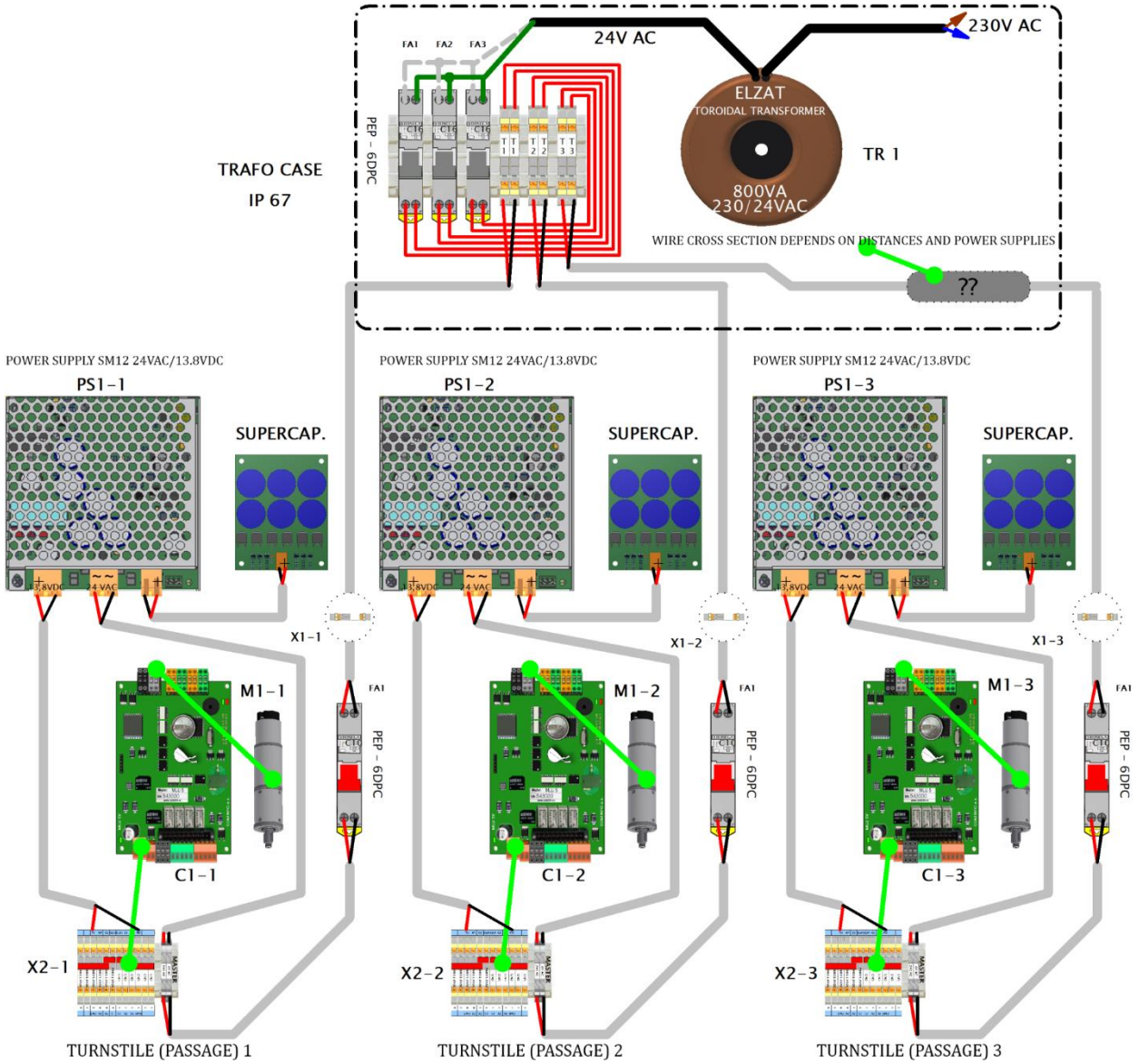
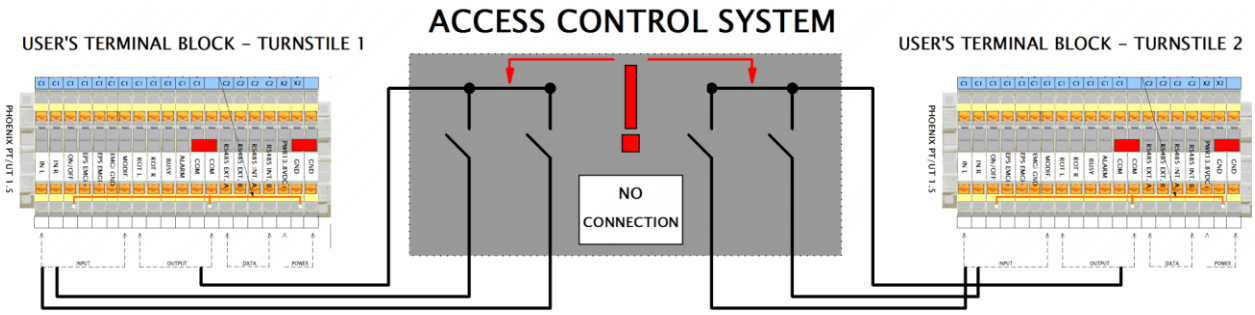


Diagram:



Example of connection of superior system without common GND potential:



CONNECTION WITH COMMON GND POTENTIAL

This connection must be used in case of installation of more turnstiles if the superior system requires setting the turnstiles under a common GND potential for control purposes.

In case of a failure, both poles of SM12 power supply will disconnect and the turnstile will be completely disconnected from the common supply transformer.

In case of double-pole protection, power sources can be set under the same GND potential.

Only special DPC circuit breakers supplied by the manufacturer must be used for double-pole protection.

Superior system can control the turnstiles by common GND relay.

Circuit diagram:

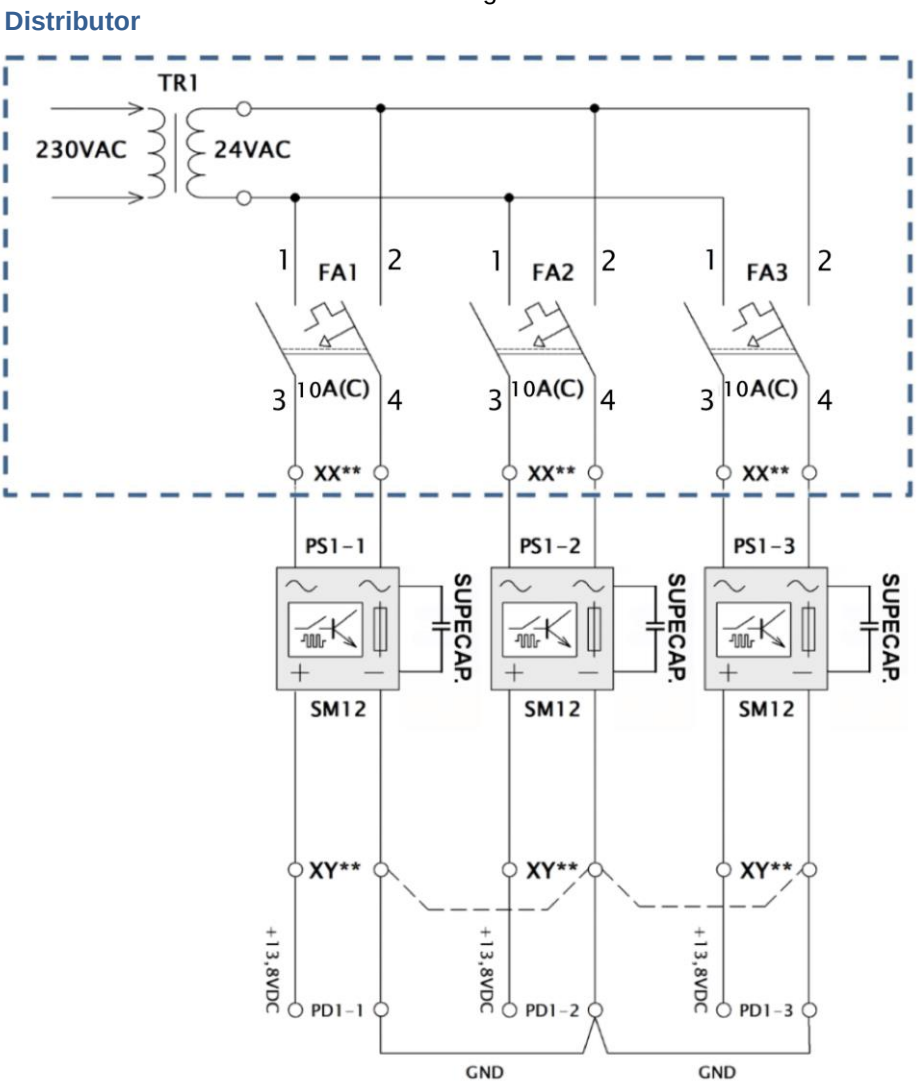
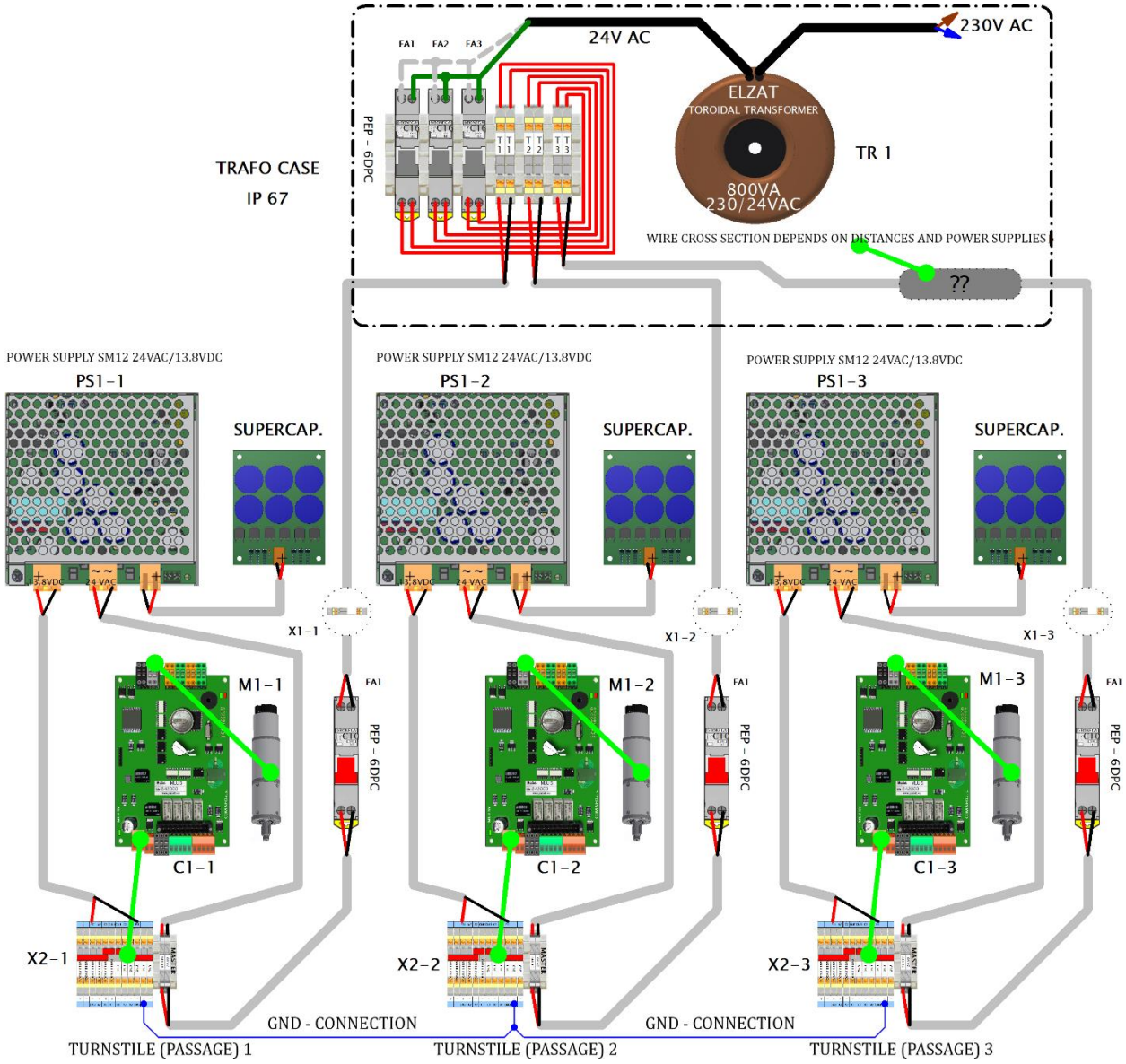
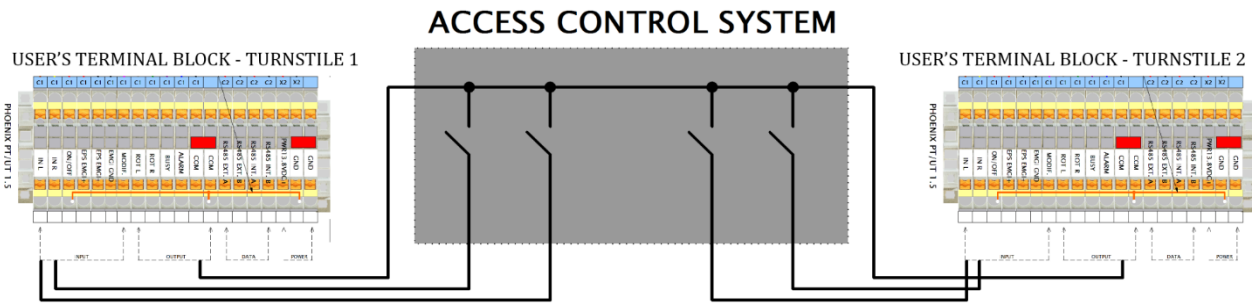


Diagram:



Example of connection of superior system with common GND potential:



10.3. CONNECTION OF EXTERNAL 230VAC MAINS POWER SUPPLY

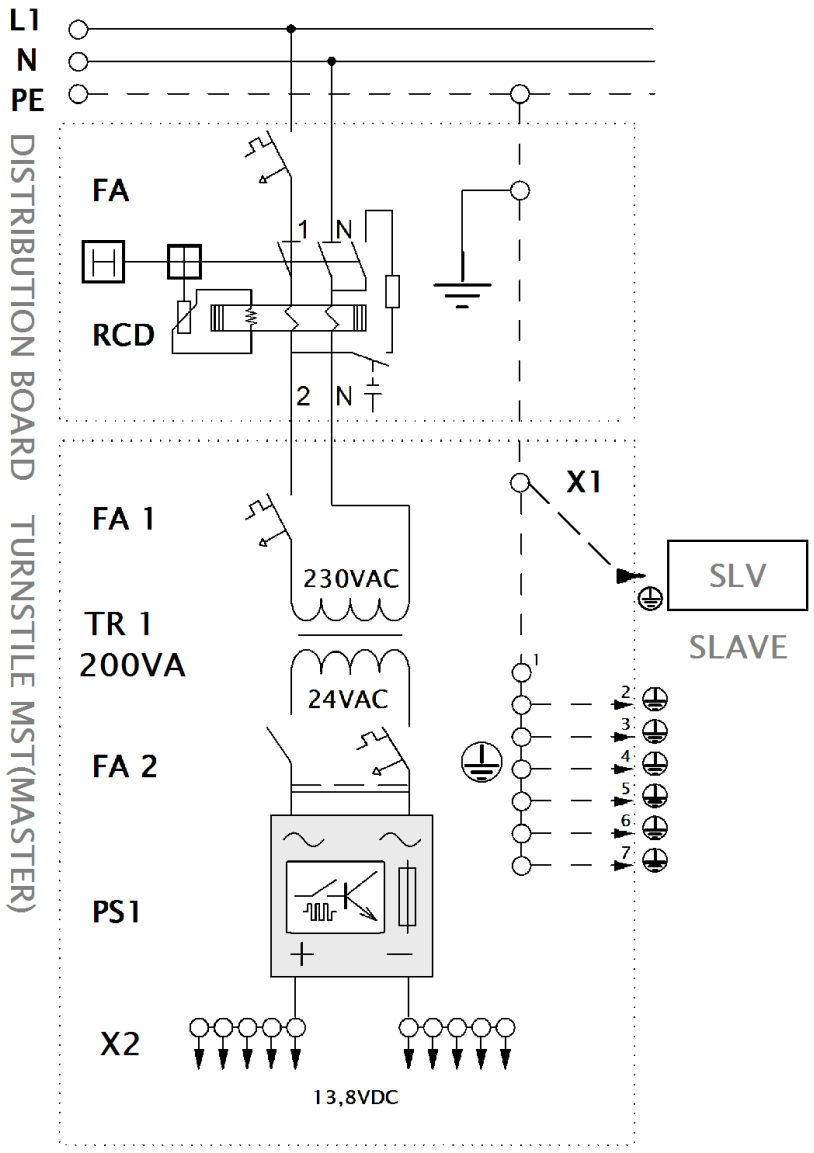
APPLIANCE MUST BE CONNECTED IN COMPLIANCE WITH INSTRUCTIONS THAT ARE ATTACHED TO IT AND ALSO IN COMPLIANCE WITH RESPECTIVE LEGAL REGULATIONS AND STANDARDS, WHICH ARE EFFECTIVE IN THE COUNTRY OF INSTALLATION OF THE PRODUCT. CONNECTION MAY BE PERFORMED ONLY BY A QUALIFIED PERSON

Examples of regulations for select countries:

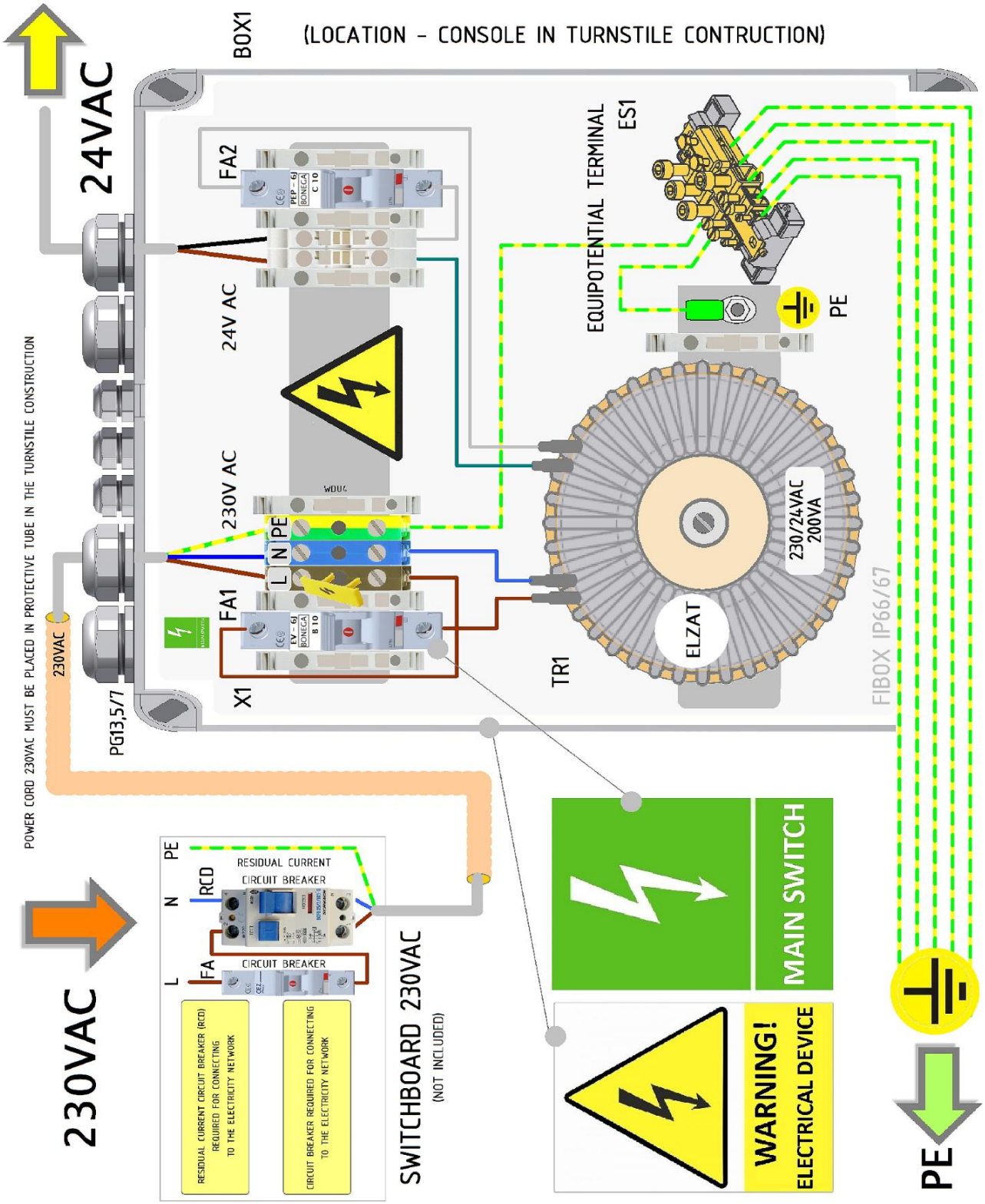
- **CZ: ČSN 33 2000 – 4 – 41 ed.2, ČSN 33 2000-7-706 ed.2, ČSN EN 62305-1 až 4, ČSN 34 0350, ČSN 33 2180**
- **D: DIN VDE 0100-410 Abschnitt 413**
- **EU: IEC 60364-4-41**

CONNECTING THE DEVICE TO THE MAINS POWER SUPPLY IS POSSIBLE ONLY FROM A CIRCUIT EQUIPPED WITH A RESIDUAL-CURRENT DEVICE WITH IΔN=0,03A AND A CIRCUIT BREAKER FOR PROTECTION FROM INJURY BY THE ELECTRIC CURRENT.

Circuit diagram:



Distributor example:



10.4. POWER INPUT OF THE TURNSTILE

Table of maximum power input values during the operation of the turnstile without optional accessories:

Process	Power input [VA]	Note
Passage through the turnstile [1])	**Max 145**	For one passage (2x drive units)
Idle state of the turnstile (turnstile OFF)	**20**	Locked in home position
Idle state of the turnstile (turnstile ON)	**3**	Unlocked in home position

Table of power input increase with optional accessories:

Optional accessories	Current [A]	Note
Access Light [2])	**+5.5**	Permanently (for 1x Access Light)
Lane Light (Direction) [3])	**+5.5**	Permanently (for 1x Lane Light)

[1]) The power input depends on the turnstile glass wing dimensions.
Small wing = small power input, large wing = large power input.

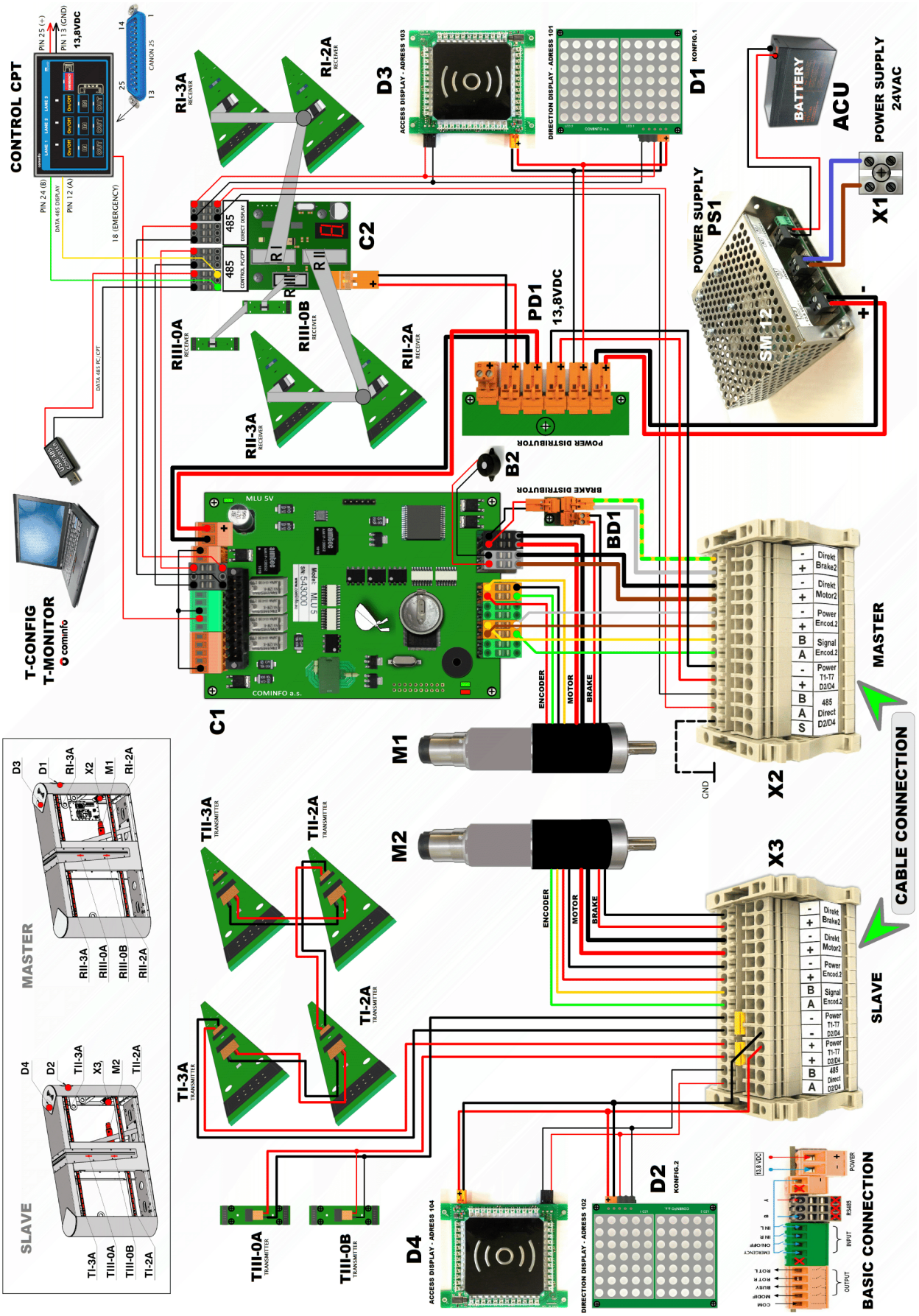
[2]) Access Light is an optional accessory.
It may be installed either only for one passage direction (1 piece) or for both passage directions (2 pieces).

[3]) Lane Light (Direction) is an optional accessory.
It may be installed either only for one passage direction (1 piece) or for both passage directions (2 pieces).

11. COMPLETE CONNECTION OF THE TURNSTILE

CAPTIONS TO THE DIAGRAMS:

C1 - MLU control electronics
C2 - Control electronics of sensors with integrated RS485 distributor
M1 - MASTER drive unit
M2 - SLAVE drive unit (not available in a single-wing version)
X1 - Main power terminal block
X2 - MASTER turnstile terminal block
X3 - SLAVE turnstile terminal block
PS1 - SM12 (24VAC/13.8VDC) power supply
ACU - Backup accumulator
PD1 - Power supply distributor
BD1 - Brake power supply distributor
B2 - Buzzer - system alarm
D1 - MASTER turnstile Lane Light
D2 - SLAVE turnstile Lane Light
D3 - MASTER turnstile Access Light
D4 - SLAVE turnstile Access Light
R** - Receiving sensor in the MASTER turnstile
T** - Transmitting sensor in the SLAVE turnstile


CONTROL CPT
PIN 25 (+)
PIN 13 (GND)
13,8VDC
CANON 25
PIN 24 (B)
DATA 485 DISPLAY
PIN 12 (A)
18 (EMERGENCY)
DATA 485 PC-CPT
T-CONFIG
T-MONITOR
cominfo
RI-3A
RECEIVER
RI-2A
RECEIVER
D3
ACCESS DISPLAY - ADRESS 103
DIRECTION DISPLAY - ADRESS 101
D1
KONFIG.1
BATTERY
ACU
POWER SUPPLY
24VAC
X1
POWER SUPPLY
PS1
SM 12
C2
485
DIRECT DISPLAY
CONTROL PC/DT
RIII-0A
RECEIVER
RIII-0B
RECEIVER
RII-2A
RECEIVER
RII-3A
RECEIVER
PD1
13,8VDC
POWER DISTRIBUTOR
B2
BRAKE DISTRIBUTOR
BD1
MLU 5V
COMINFO a.s.
C1
ENCODER
MOTOR
BRAKE
M1
M2
Direkt Brake2
Direkt Motor2
Power Encod.2
Signal Encod.2
Power T1-T7 D2/D4
485 Direct D2/D4
MASTER
X2
GND
X3
SLAVE
CABLE CONNECTION
TII-3A
TRANSMITTER
TII-2A
TRANSMITTER
TI-2A
TRANSMITTER
TI-3A
TRANSMITTER
TIII-0A
TRANSMITTER
TIII-0B
TRANSMITTER
D4
ACCESS DISPLAY - ADRESS 104
DIRECTION DISPLAY - ADRESS 102
D2
KONFIG.2
15,8 VDC
POWER
RS485
INPUT
OUTPUT
BASIC CONNECTION
D3
D1
RI-3A
X2
M1
RI-2A
MASTER
RII-3A
RIII-0A
RIII-0B
RII-2A
D4
D2
TII-3A
X3
M2
TII-2A
SLAVE
TI-3A
TIII-0A
TIII-0B
TI-2A

12. TROUBLESHOOTING

Possible causes of malfunctions are described in the *Troubleshooting* section of the operating instructions.

12.1. CHECKING ERROR STATES AFTER TURNING ON THE POWER SUPPLY

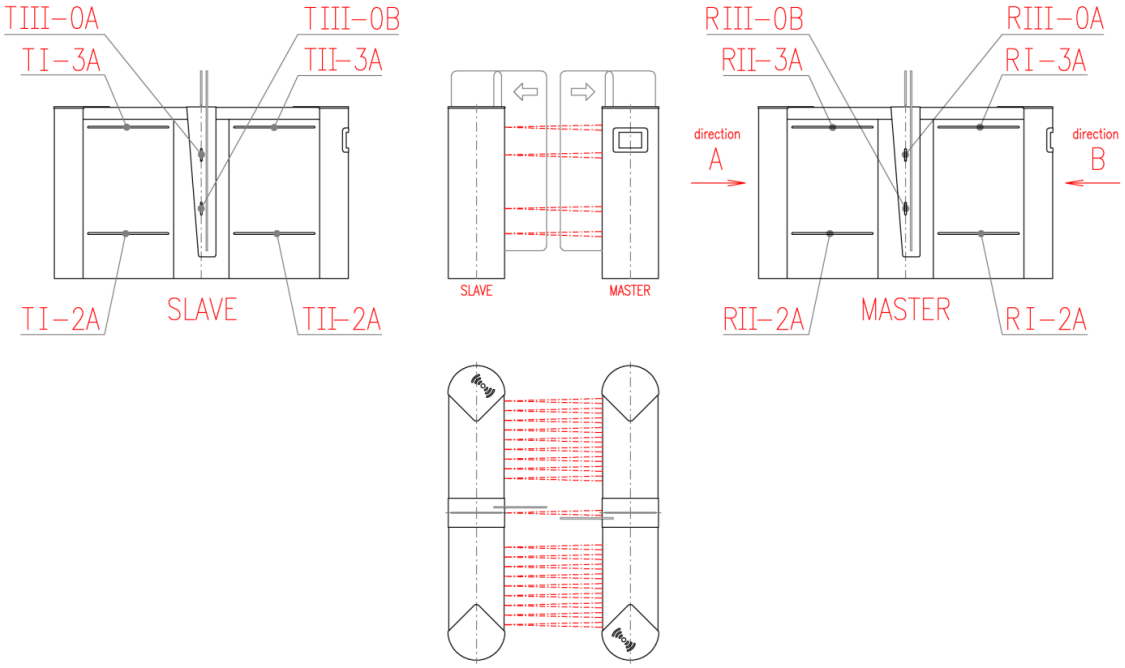
- Remove the side cover of the Master turnstile according to chapter *How to access the anchoring holes and motor drive unit with control electronics*. Check the electronics LED signalization.
- The electronics is fitted with three LED diodes which signal its status.
- Their placement is described in chapter *Description of the control electronics*.

LED (state)			MALFUNCTION	REMOVING THE MALFUNCTION
1	2	3		
			Power failure of the turnstile (green LED1 does not emit light)	Measure the power supply. Check or replace the circuit breaker of the power supply unit. Check and tighten all clamps.
			Timeout for automatic turnstile blocking is activated (red LED3 permanently emits light)	Request a code for unblocking from the manufacturer and unblock the turnstile using the TCONF application.
		0.25Hz	Discharged backup accumulator of the electronics (red LED3 flashes at 0.25Hz)	Check the accumulator according to the following chapter. Send the electronics to the manufacturer for accumulator replacement.
		4Hz	Firmware is not uploaded (red LED3 flashes at 4Hz)	Upload current version of the firmware after consulting the manufacturer.
		4x flash	Malfunction in some part of the motor drive unit (red LED3 4x flashes + pause)	Check the motor drive unit according the chapter Checking the motor drive unit.

12.2. CHECKING THE OPTICAL SENSORS

The set of bars with 40 optical sensors serves for detection of passage of persons through the turnstile. It is composed of transmitter bars **T** on the SLAVE turnstile and receiver bars **R** on the MASTER turnstile. Receiver bars are connected to the **C2** sensors control electronics. Transmitter bars **T** are connected to power supply voltage in the **X3** terminal block. The MIDDLE turnstile has transmitters on one side, and receivers on the other side.

12.2.1. LAYOUT OF THE OPTICAL SENSORS

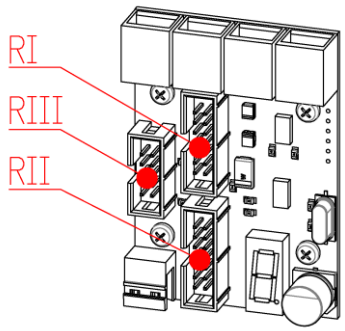


INSPECTION - SBCB SENSORS (C2) CONTROL ELECTRONICS

12.2.2. INSPECTION - SBCB SENSORS (C2) CONTROL ELECTRONICS

After connecting the power supply voltage, the firmware number is displayed on the control electronics screen of **C2** sensors for **1s**. Then, the state of connection of individual receiver bars is displayed on the screen for the entire time. If all receiver bars are connected correctly, **0** is displayed on the screen. If any of the bars is connected incorrectly due to damaged cabling or connector, the respective bar number is displayed on the screen. Numeral assignment to individual receiver bars and assignment of connectors to individual bars of receivers can be found in the following table.

C2 sensors control electronics:



receiver bars markings	Connector number	Displayed on the screen
RI-2A	RI	2
RI-3A	RI	1
RII-2A	RII	6
RII-3A	RII	5
RIII-0A	RIII	F
RIII-0B	RIII	E

- Check if red LEDs are blinking on all six transmitting sensor bars **T**, which signal connection of power supply voltage and correct function of oscillator
- Check if green LEDs are lit up on all six receiver sensor bars **R**, which signal connection of power supply voltage

12.2.3. CHECKING THE SIGNALIZATION OF SENSOR BARS ELECTRONICS

- Check if green LEDs are blinking on all six transmitting sensor bars **T**, which signal connection of power supply voltage. The blinking signals the synchronization is correct. If LED is lit up, it means the signaling cable is interrupted or the oscillator is malfunctioning.
- Check if green LEDs are lit up on all six receiver sensor bars **R**, which signal connection of power supply voltage.

12.2.4. CHECKING VIA THE TCONF APPLICATION

While checking, all covers with clean apertures must be installed on the turnstile.

Carry out the inspection using the **TCONF** application and the *Diagnostics – Sensor test* tool. The computer must be connected to the internal communication line 485.

- Disconnect one of two 485 DATA INT connectors from the **C2** sensors electronics and connect the 485 connector from the computer with converter.
- Stop the communication server using the **CmfMng** application, by pressing the  button.
- Run the **Sensor Test** program, set the correct COM. Leave the pre-set transfer speed of 50ms and start the communication of sensors with the program using the **Open** button.
- All squares must stay white after starting the communication.
- Gradually, one by one, cover each of 40 receiving sensors of the upper and lower horizontal bars with your finger and observe the squares on the screen, which signal change by blue colour.
- If you find out that some transmitting or receiving sensors are malfunctioning, always replace the whole sensor bar.
- Finally, disconnect the laptop and reconnect the original connector.
- In the **CmfMng** application, start the communication server using the green button  .

The turnstile is capable of operation even when individual transmitting and receiving sensors fail. If you find out that some sensor is not working, it is absolutely necessary to replace the whole sensor bar. Four types of identical replaceable sensor bars are used:

long sensor bar - transmitters
long sensor bar - receivers
short sensor bar - transmitters (TIII-0A / TIII-0B)
short sensor bar - receivers (RIII-0A / RIII-0B)

In case of a malfunction of an individual sensor, it is not possible to determine if it is a transmitting or receiving sensor.

First, replace the transmitting sensor bar. If the malfunction prevails, replace the receiving sensor bar.

Replacement of sensor bars is described in detail in the Instructions for preventive maintenance.

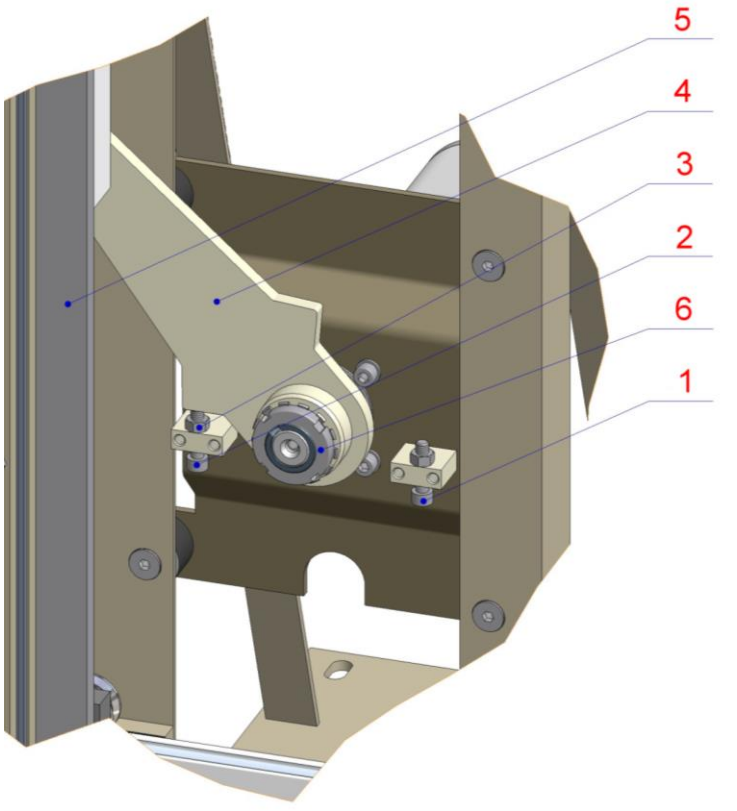
12.3. CHECKING AND ADJUSTING THE MOTOR DRIVE END STOPPERS

The end stoppers are adjusted when the turnstile is manufactured. Before the initial turnstile start-up, it is necessary to check if they weren't adjusted during the turnstile installation and whether the bar (pos.5) or the movable glass wing does dot collide with the turnstile cabinet – this is done by manually moving to both end stoppers (pos.1 and 2). If the bar or glass collides with the cabinet, the end stoppers must be adjusted again. Perform the check and adjustment of the end positions with the power supply switched off.

Adjustment procedure:

- Check if the nut of the clamp clutch (pos.6) is tightened.
- Loosen the stop bolt of closed position (pos.1), and turn the wing by hand to its end position so that the bar (pos.5) touches the turnstile cabinet.
- Fasten the stop bolt by hand so as it touches the stop plate on the motor drive unit arm (pos.4).
- Fasten the stop bolt by one more turn, and fix it by a contra nut (pos.3).
- Adjust the stop bolt of open position (pos.2) the same way.

If the bar or movable glass wing hit the cabinet even after this adjustment, it is necessary to adjust the bolts (pos.1 and 2) so that the hitting does not happen but the maximum movement path of the turnstile wing is maintained. In the open position (wing recessed in the turnstile cabinet), the edge of the glass should be at the same level as the edge of the brushes or slightly extended towards the passage gate. Check the path length of the wings in the given gate. If these lengths differ with a tolerance of more than ±1mm, make a correction on the closed position stoppers.



12.4. CHECKING AND ADJUSTING THE LINEAR RAIL ROLLERS

Rollers of the linear rail are adjusted when the turnstile is manufactured. Before the initial turnstile start-up, it is necessary to check if the mutual clearance between rollers and rails has not increased or decreased during installation of the turnstile.

Adjustment procedure:

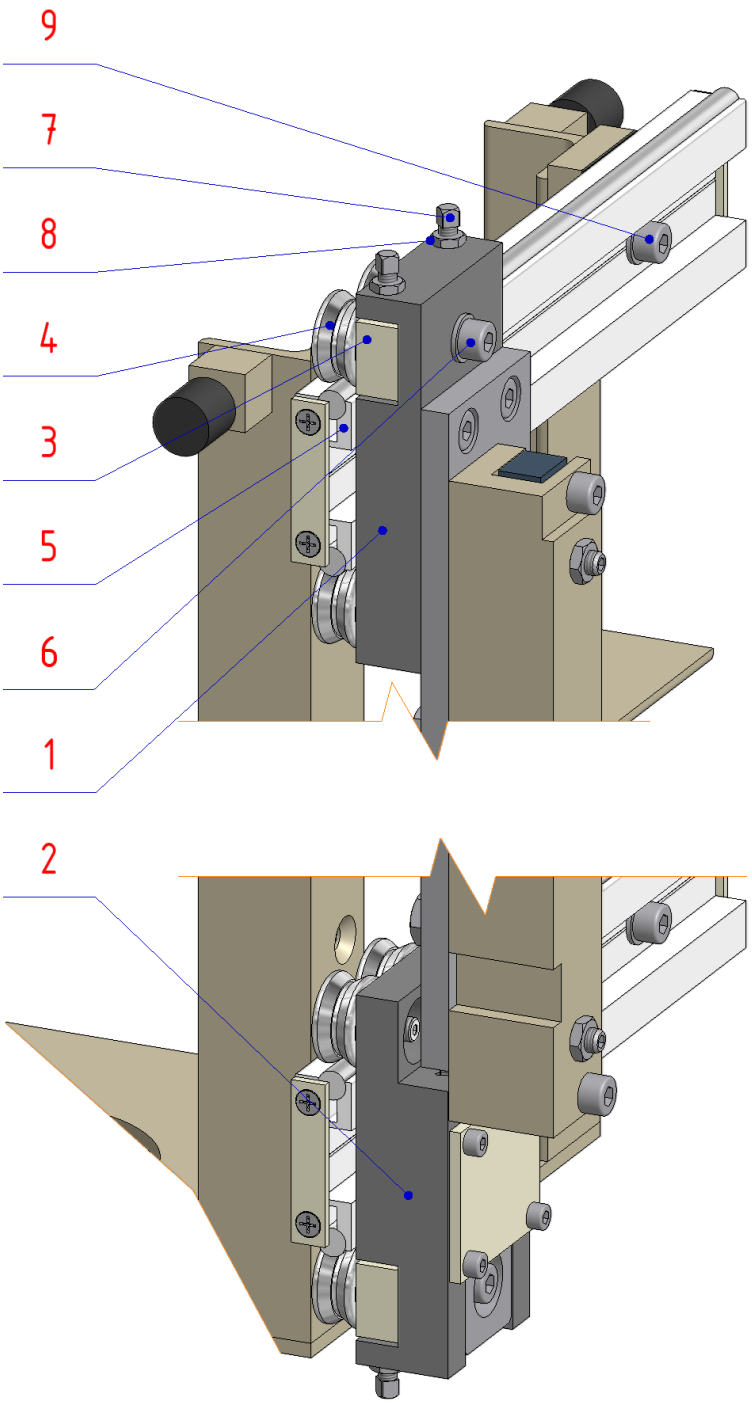
If you need to adjust the mutual position of linear rail rollers and thus determine clearances of the rails, proceed as follows:

1. Remove the side covers.
2. Adjust the rollers only after the motor drive unit and movable glass wing including the brushes are installed completely. Check the centering of the wing with relation to the brushes.
3. Check and eventually tighten the four M8 bolts (pos.9), which are fastening the rail of rollers (pos.5).
4. Check the surface of the steel part of the rail (pos.5). If you discover any surface damage, it is necessary to replace the rail.
5. Now, proceed to the actual adjustment of the rollers (pos.4). Lightly loosen the M8 locking bolt (pos.6) on the upper carriage and by turning the 2 M6 adjusting bolts (pos.7), achieve the optimal position of the two rollers, which are fastened in a common bracket (pos.3). Secure the adjusting bolts (pos.7) in this position by contra nuts (pos.8). Finally, secure the position of the carriage with the rollers by tightening the locking bolt (pos.6).
6. After tightening the locking bolt (pos.6), mutual position of individual elements of the linear rail may change. Thus, it is necessary to re-check mutual positions, and in case of a change, re-adjust again.
7. Adjust the position of rollers of the lower carriage (pos.2) the same way.
8. When adjusting the linear rail rollers, try to achieve such mutual position of the carriages and rollers, that will ensure smooth and easy movement of the carriages in linear rail – rollers must roll in a way that any roller may be always easily turned by hand both on upper and lower carriage in the entire length of movement. However, the clearance cannot allow to manually turn more than one roller on each carriage at the same time.
9. With the power supply voltage turned off, measure maximal force necessary for wings movement in the entire length of movement of both turnstile wings. Difference between both wings must not exceed 10N. If the difference is bigger, perform inspection of the moving mechanism again.
10. Finally, check the stoppers of the motor drive unit according to procedure described in chapter *Checking and adjusting the motor drive end stoppers*.

Bearing of the linear rail roller is its integral and non-demountable part, and is fitted with permanent filling of grease. DO NOT grease the surface of the linear rail, and keep it clean on a regular basis.

If the clearance of the rollers is too big, the *movable glass wing* may hit the *inner turnstile construction* and get broken.

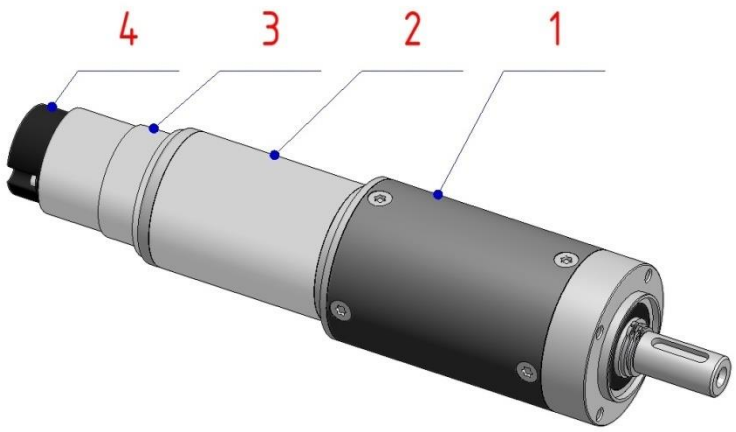
If the clearance of the rollers is too small, their surface and the rail may get damaged due to large pressure on the rail. Small clearance would also cause the control electronics will not be able to start the turnstile wing drive.



If horizontal deviation of movable wings increases during operation of the turnstile, which is caused by increase of clearance of the linear rail, it is necessary to adjust the linear rail rollers. These clearances must be regularly checked.

12.5. CHECKING THE MOTOR DRIVE UNIT

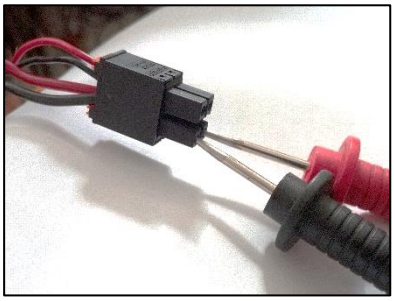
12.5.1. DESCRIPTION OF THE DRIVE UNIT



1. Planetary gearbox
2. Electromotor
3. Electromechanical brake
4. Speed sensor (magnetic encoder)

12.5.2. CHECKING THE ELECTROMOTORS

- Disconnect the power supply.
- Pull out the black MASTER motor drive connector from MLU5 control electronics.
- Set the multimeter to measure resistance.
- Connect the multimeter to the bottom pins of the connector as shown on the figure below. The value should be between **2 - 20 Ohms** (depending on the wear and position of the brushes and commutator).



- If the measured value is higher, move the wing several times with disconnected multimeter and repeat the measurement.
- Measure the SLAVE motor drive unit the same way on the grey connector.
- If you do not measure any resistance, look for the fault according to the wiring diagram.

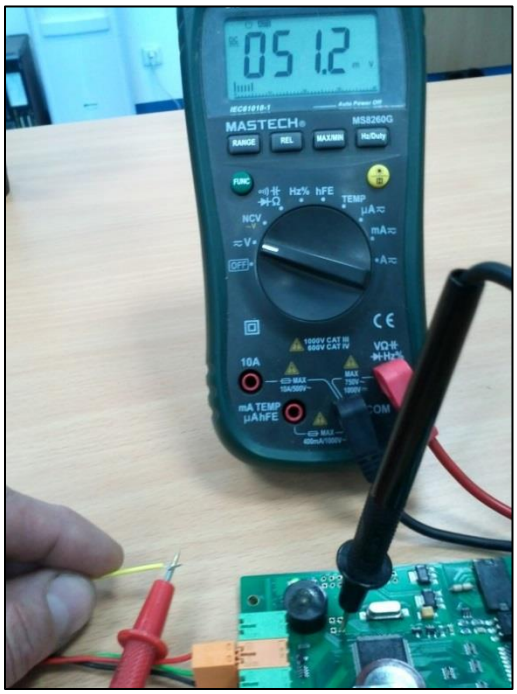
12.5.3. CHECKING THE BRAKES

- After switching off the supply voltage, check the free rotation of the turnstile wings.
- After switching on the supply voltage by pushing the wing in the home position with a force of approx. **50-100N**, we check the function of the brake, which must not slip. If the turnstile is unlocked in the home position configuration, the wings lock only after they are pushed.
- Open the turnstile several times using the EMERGENCY signal. Check for audible clicking of both brakes when braking and releasing when reaching the open position.

12.5.4. CHECKING THE ENCODERS

- Turn off the power supply.
- Pull out the black and gray motor connectors and both orange encoder connectors from the MLU5 control electronics.
- Connect the power supply.
- Set the multimeter to measure VDC voltage.
- Measure both channels of the **SLAVE** encoder (yellow and green wire) against the measuring point on the electronics according to the following figures.
- During very slow **SLAVE** wing movement (1cm), the voltage must change the two levels on both channels as seen in the figures.
- Measure both channels of the **MASTER** encoder the same way, while turning the **MASTER** wing.

LOG 0
Approx. 50-60mV



LOG 2
Approx. 4.5-4.6V

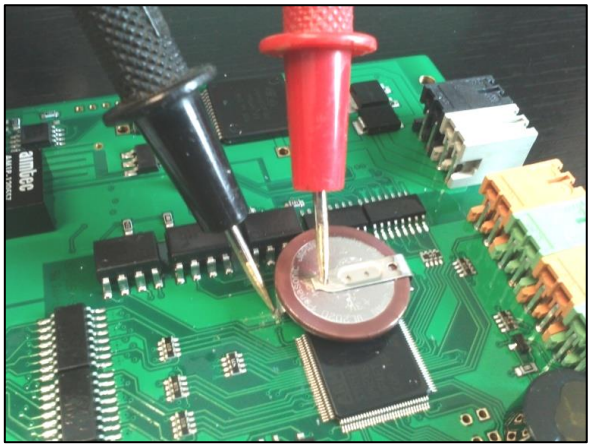
12.6. CHECKING THE BACKUP ACCUMULATOR OF THE ELECTRONICS

The accumulator serves to back up RAM memory in the event of a power failure.

CHECKING THE ACCUMULATOR STATE

- Before measuring, clean the measuring points of the accumulator (the electronics is equipped with protective insulating varnish including the accumulator surface).
- With disconnected supply voltage, measure the accumulator 3V voltage as shown on the figure.
- If you measure voltage level lower than 2.5V, it is necessary to replace the accumulator.

Measuring points and measurement of the 3V backup accumulator of the electronics:



CHECKING THE ACCUMULATOR FUNCTIONALITY

Functional accumulator:

- after connecting the power supply, the turnstile is initialized
- you can download the logs using the TCONF application

Non-functional accumulator:

- after connecting the power supply, the turnstile is not initialized and turnstile is not operational
- all logs are lost from the memory

Only the manufacturer COMINFO can replace the accumulator.

EMERGENCY OPERATINAL STATE OF THE TURNSTILE WITH NON-OPERATIONAL ACCUMULATOR

- The turnstile may be put into emergency operational state after turning on the power supply by the electronics reset function (per chapter *Electronics reset function*).
- The turnstile is operational until the power supply is lost.

12.7. ANALYSIS OF MALFUNCTIONS AFTER RESET OF CONTROL ELECTRONICS

- The malfunctions are detected only after previous electronics reset per chapter *Electronics reset function*.
- The malfunctions are detected by the number of red LED3 flashes according to the following table (frequency 2Hz + pause).

LED (state) 1	LED (state) 2	LED (state) 3	MALFUNCTION	REMOVING THE MALFUNCTION
		1x flash	Motor drive unit malfunction or mechanical failure.	Inspect the mechanical state of the motor drive unit. Replace the drive unit.
		3x flash	Low supply voltage at the electronics terminals.	Measure the power supply voltage during turnstile initialization, it must not drop below 12.5 VDC. Check the lead-in mains. Check the cross-section dimensioning of power supply cables.
		4x flash	Correct initialization was not completed.	Repeat initialization process.

12.7.1. ELECTRONICS RESET FUNCTION

This is a controlled function that must be triggered during malfunction analysis after replacing the MLU5 control electronics or the motor drive unit.

- The start of the electronics reset is confirmed by a single flash of red LED3 followed by malfunction detection and initialization.

During the electronics reset, the following occurs:

- malfunction detection
- start of the device initialization
- configuration of the device remains intact after the electronics reset
- the event register LOG is not overwritten

After starting the electronics reset the operator must ensure safety (see chapter *Initialization of the turnstile*). It must not be interfered in any way with the turnstile during the procedure.

Electronics cannot be reset when the turnstile is running on the backup accumulator or if the voltage of the turnstile terminal drops below 12.5VDC (due to the voltage drop on the power supply cables).

The electronics is reset in following cases:

1. After connecting the supply voltage - Activate and deactivate the ON/OFF input five times within 20 seconds after stabilization of the device in its home position.
2. After connecting the supply voltage - Activate and deactivate the ON/OFF button on the Touch Panel ten times within 20 seconds after stabilization of the device in its home position.
3. After connecting the supply voltage - Activate and deactivate the ON/OFF switch of the turnstile testing device five times within 20 seconds after stabilization of the device in its home position.
4. By pressing the RESET icon in the TCONF application - any time during the device operation.
5. By uploading a new configuration in the TCONF application - any time during the device operation.
6. By uploading a new firmware in the TCONF application - any time during the device operation.

The electronics does not detect malfunctions in the optical passage sensors. If the turnstile behaves incorrectly and the electronics do not indicate any malfunctions, it is necessary to verify their correct function according to the chapter *Control electronics of the SBCB (C2) sensors*.

12.7.2. CHANGING THE ELECTRONICS FIRMWARE

- Firmware can be changed using the TCONF application. The computer must be connected to the external communication line 485. Uploading the firmware takes approximately 1min and its progress can be observed on the barcode.

Firmware may only be changed after consulting the manufacturer.

After uploading the firmware, the following occurs:

- electronics reset
- malfunction detection
- start of the device initialization
- configuration of the device remains intact after changing the firmware
- the event register LOG is overwritten

The Logs are deleted from the electronics memory by uploading the firmware.

Before uploading the firmware to the control electronics, it is necessary to download the Logs into a computer using the TCONF application (list of errors and events), which must be sent to the service center.

12.8. SUBSTITUTING THE TRANSMITTING AND RECEIVING SENSORS

Such substitution is necessary when the sun directly shines on receiving sensors, which causes their oversaturation. Sensors are then unable to receive modulated light beam from the transmitters. Oversaturation of receiving sensors causes that the sensor evaluates an obstacle in the turnstile corridor and makes the turnstile close and open incorrectly, making it non-functional.

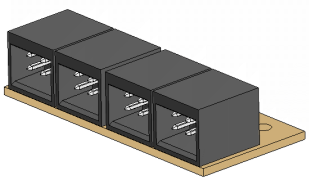
Before starting, it is recommended to thoroughly study the documentation and understand the principle of sensors wiring. Especially the principle of coding of receiving sensors cables.

It is also strongly recommended to take pictures of the original state in order to facilitate potential unclarities between disassembling and re-assembling of sensors and cables. It is advisable to mark cables and respective connectors with a permanent marker.

Experienced technician who already performed this substitution should be able to finish it in 2 hours. If a technician is performing this substitution for the first time, you should expect the turnstile will be shut down for approximately 4 hours.

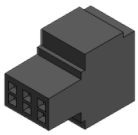
12.8.1. COMPONENTS NECESSARY FOR PROFESIONNAL SUBSTITUTION

- Distributor 485 – large for 4x connector (order number 1009084)



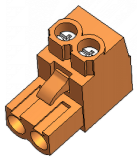
Note: In case of emergency, it can be replaced by any terminal block where data lines can be interconnected.

- Connector 485 (order number 1008583)



Note: One connector is standardly not connected and is inserted in the electronics of sensors.

- Screw connector for connection of power supply cable of transmitters to the PD1 power supply distributor in the MASTER turnstile (order number 1008581)



Note: One connector is standardly not connected and is inserted in the PD1 power supply distributor.

- 30pcs plastic strips for attaching wires
  Note: Wires can be attached also in different ways.

- 2 pcs of 1mm diameter crimp sleeves
  Note: Use of crimp sleeves is professional, however, the Weidmüller flexible clamps are also designed for connection of wires of given cross-section without them.

- 6pcs of self-adhesive LPR spacers (order number 1008240) for mounting sensor electronics

Note: Electronics may be installed in a plastic box or attached in a different way. The important thing is that it does not touch any metal parts of the turnstile.

From the notes to necessary components for professional substitution it is apparent that the substitution may be feasible even without the components that have to be ordered from the manufacturer.

For the final testing of the turnstile, you need the following items:

- Turnstile testing device
- Notebook with installed SENSOT TEST program
- RS485-USB converter supplied by the COMINFO company

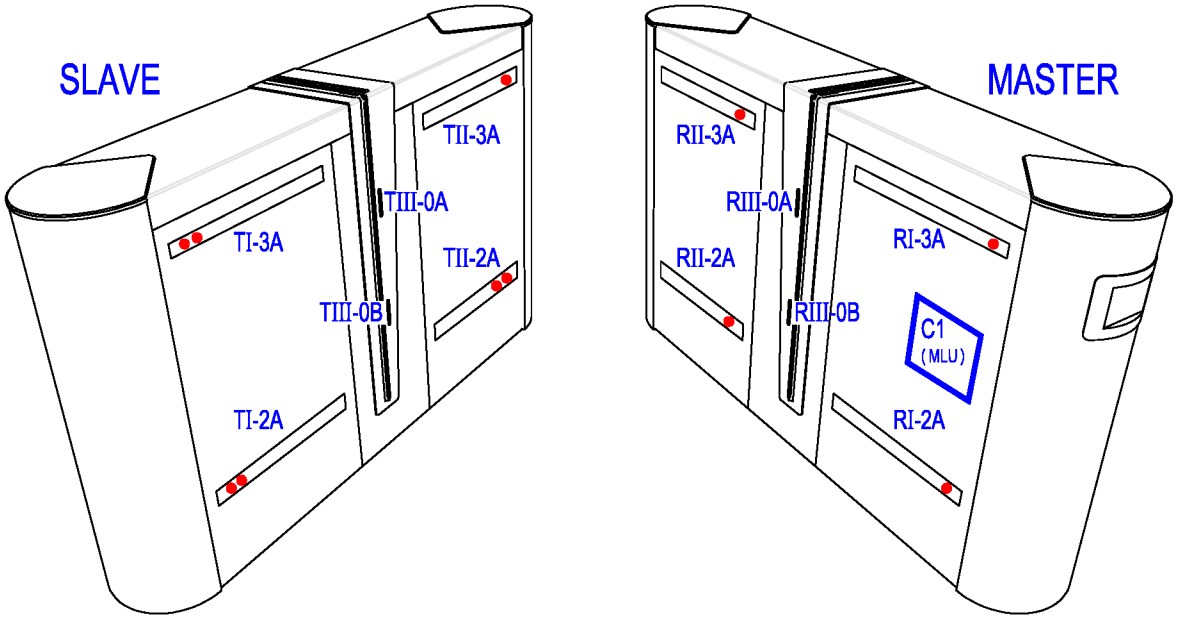
12.8.2. LAYOUT OF SENSORS

● - the red point marks the location of connectors on sensor bars

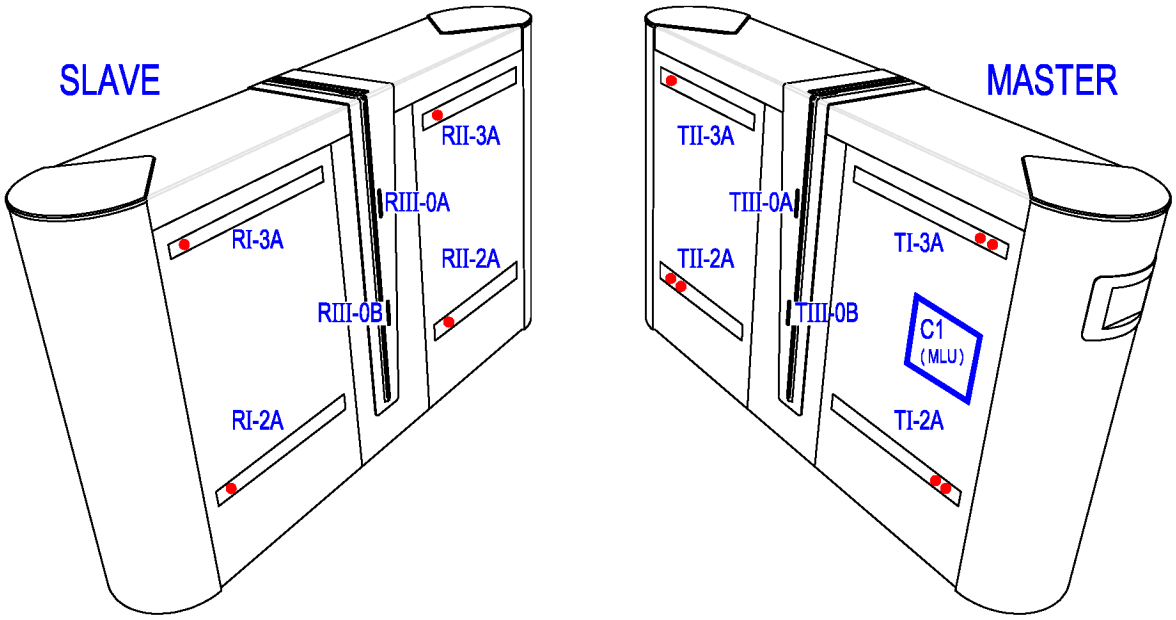
Tx – Sensor bars with transmitters

Rx – Sensor bars with receivers

LAYOUT OF SENSORS BEFORE SUBSTITUTION:



LAYOUT OF SENSORS AFTER SUBSTITUTION:



12.8.3. DESCRIPTION OF SUBSTITUTION

1. Nip off all plastic tapes that fasten the cabling of sensors.

2. Disconnect the connectors and dismount the cabling of **T**x transmitters.

3. Disconnect the connectors and dismount the cabling of **R**x receivers.

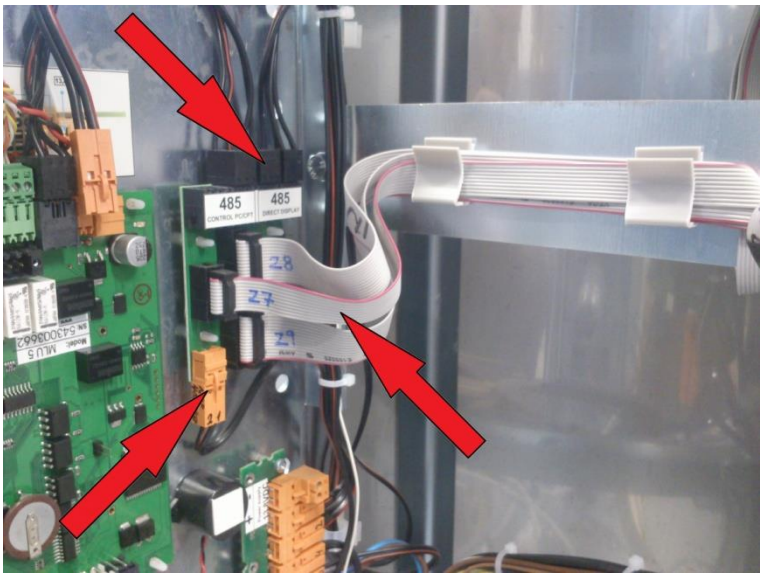
4. Dismount the sensor bars of transmitters and receivers. It is sufficient to remove the lower bars from metal brackets by deflecting the secure locks on one side and by gradually deflecting the bar. It is necessary to dismantle the metal bracket on the upper bars, to access the locks. Dismount the middle sensors also with metal brackets.

5. Install the **T**x transmitter sensor bars into the **MASTER** turnstile the same way as in case of the **SLAVE** turnstile, so that the power connectors are placed on the right side of sensor bars when looking at the turnstile (according to the figure in the chapter *Layout of sensors*).

6. Install the **R**x receiver sensor bars into the **SLAVE** turnstile so that the connectors are on the left side of sensor bars when looking at the turnstile (according to the figure in the chapter *Layout of Sensors*).

7. On the **MASTER** turnstile, disconnect the 485 connector and sensor connectors from control electronics
of **C2** sensors. Before disconnecting, uniquely mark all the cables.

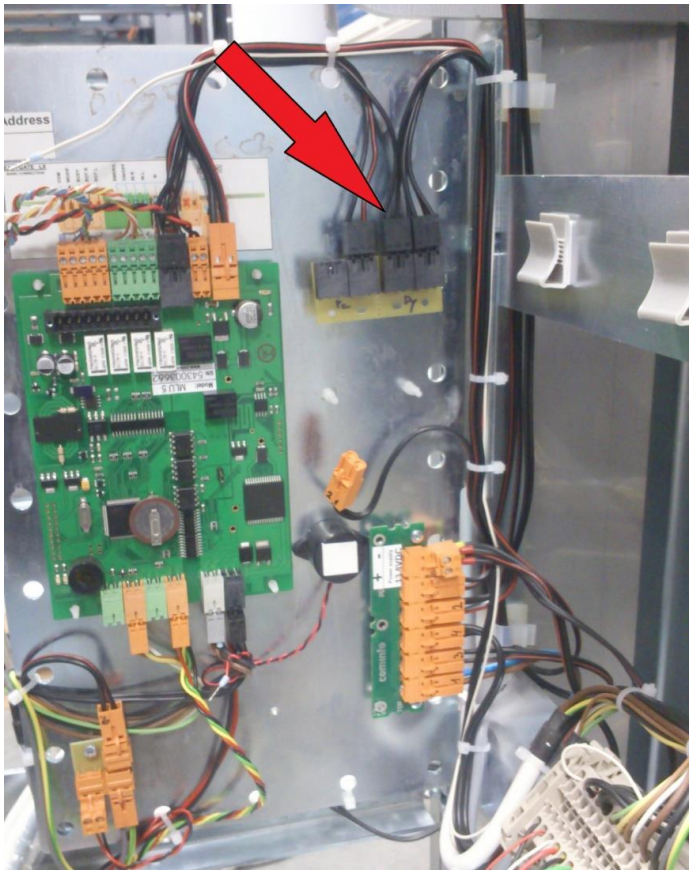
8. Disconnect the power cable of control electronic of **C2** sensors from the electronics and **P1** distributor (the cable will be used afterwards).



9. Dismount the control electronics of **C2** sensors including the plastic spacers.

10. Attach the **485 distributor** (or other terminal strip according to point nr. 12) by self-adhesive plastic spacers in the spot of control electronics of **C2** sensors.

11. Plug the connectors that were originally in the control electronics of **C2** in the 485 distributor.



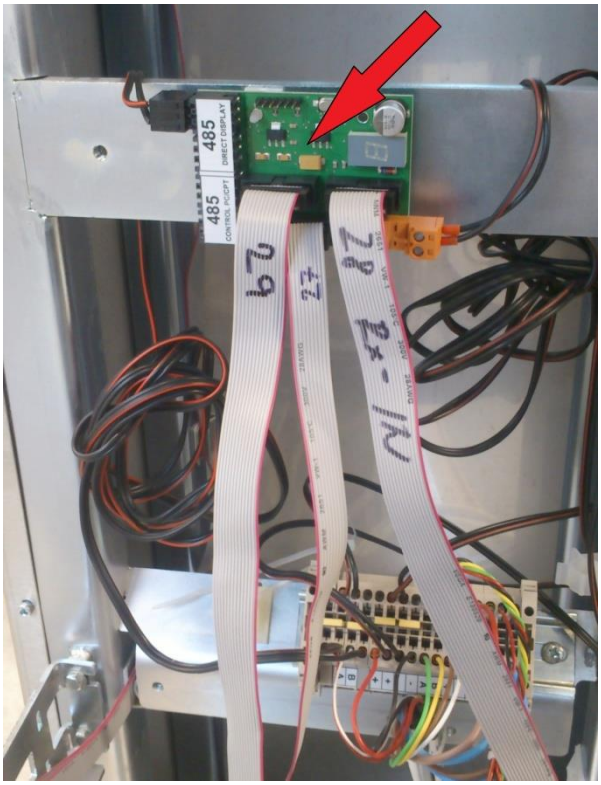
12. If you use a terminal block instead of the 485 distributor, you must only interconnect the wires which are connected in the right side of the distributor marked as 485 DIRECT DISPLAY. Three red wires must be connected in one clamp and three black wires in the other clamp. Wires connected in the left side of the distributor marked as 485 CONTROL PC/CPT that serves for controlling the turnstile must be connected separately in two other clamps (it is best to use four poles of terminal strip).

13. Interconnect the **T**x transmitter sensor bars with original supply cables.

14. Plug the connector of the supply cable of transmitters to the upper right sensor bar **TI-3A**. Connect the other end fitted with crimp sleeves to the screw connector, and connect it to the **P1** distributor to the vacant spot after the power supply connector of control electronics of **C2** sensors.

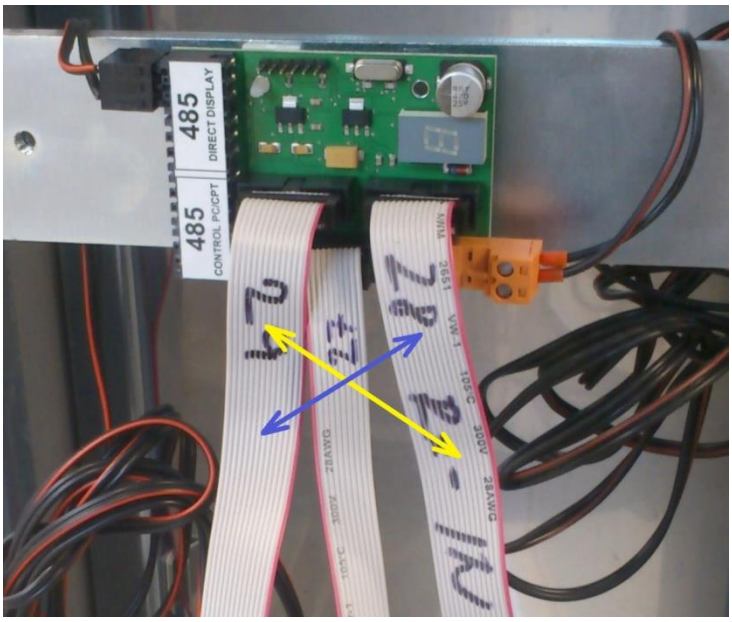
15. Using the cable clips and plastic strips to secure the cables to the turnstile frame. This completes the adjustment of the **MASTER** turnstile.

16. Move the control electronics of **C2** sensors and using the self-adhesive plastic spacers, attach it to the crossbar of the other cabinet of the respective gate above the **SLAVE X3** terminal block.



17. Interconnect the **R**x receiver sensor bars with the original flat cables so that when looking at the **SLAVE** turnstile, they are identical as they were when looking at the **MASTER** turnstile with the difference that connectors are on the left (according to the figure in the chapter *Layout of sensors*).

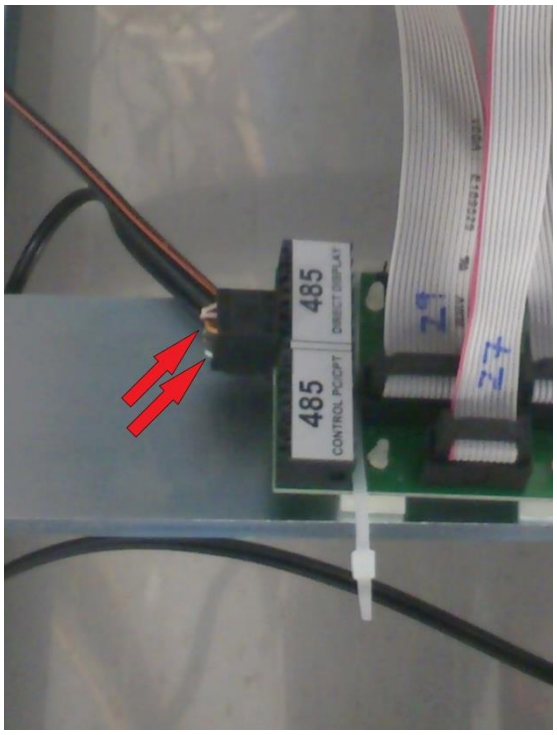
18. Connect the flat wires connectors to the electronics of **C2** sensors so that the **RI** and **RII** connectors are switched when compared to the original connection.



19. Clip off one connector from the original supply cable of control electronics of **C2** sensors and end the wires with crimp sleeves (if the turnstiles are not equipped with upper Access Light or front Lane Light, it is possible to use the spare Lane Light supply cable).

20. Connect the supply cable to the **X3** – **SLAVE** terminal block to the terminals of the original power supply of **T**x transmitters and connect the connector on the other end of the cable to the control electronics of **C2** sensors.

21. Cut the 485 Lane Light and Access Light cable 20cm from the **X3** - **SLAVE** terminal block. Insulate all four data wires and connect them to the 485 connector and then connect the connector to the control electronics of **C2** sensors to the part of the distributor marked as 485 DIRECT DISPLAY. Pay attention to the polarity of the wires.



22. Using the cable clips and plastic strips to secure the cables to the turnstile frame. This completes the adjustment of the **SLAVE** turnstile.

23. Once the adjustment is done, it is essential to check correct functionality of sensors by the **SENSOR TEST** application.

24. Finally, using the turnstiles testing device, perform complete test of the turnstile.

IF CABLES OF THE RECEIVING SENSORS ARE NOT INTERCHANGED ACCORDING TO POINT nr.18, THE TURNSTILE WILL PERFORM ILLOGICALLY.

12.9. PROTOCOL OF THE PRESCRIBED INSPECTION IN CASE OF TURNSTILE MALFUNCTION

The following table describes individual operations, which must be provably performed by the service technician of your dealer. By performing these operations and completing them by the required information, the manufacturer gains important information for the malfunction analysis. This protocol along with the confirmation of completion of the prescribed operations supplemented by the required information must be sent to the manufacturer as soon as possible including the claim report form and video recording of the malfunction.

Operation No.	Service technician operation	Operation description	Confirmation of operation completion
1	Fill in the claim report form and send it to the manufacturer	The claim report form is part of the Installation Instructions. Fill in the serial numbers and describe the malfunction in detail and its frequency.	☐
2	Send information regarding the turnstile power supply	Indicate the type of the used power supply and serial numbers of all turnstiles that are powered by it, length and cross section of the power supply cables.	☐
3	Send a video recording of the malfunction manifestation	In the AVI format.	☐
4	Update the TCONF application	Automatically after running the application while connected to the Internet, before the service intervention.	☐
5	Download Logs and configuration from the MLU5 electronics and send both to the manufacturer	Using the TCONF application.	☐
6	Check correct connection	Perform inspection of the inner connection and connection of control input and output signals of the superior system according to the Installation Instructions.	☐
7	Check the control signal length	Control signal: Length =..... ms	☐
8	Check the wiring	Check the wiring connections for all connectors and terminals by pulling the wires. Check tightening of screw clamps.	☐
9	Check the free rotation and running of motor and mechanical parts	After switching off the supply voltage, check the free movement of the turnstile wings.	☐

Operation No.	Service technician operation	Operation description	Confirmation of operation completion
10	Check the wings home position, adjust end stoppers	After switching the supply voltage off and back on, check correct returning of both wings to the home position. In case the wings do not stop in the correct position, adjust the stoppers according to chapter *Checking and adjusting the wing end stoppers*.	☐
11	Checking the correct brake clearance	Open the turnstile several times using the EMERGENCY signal. Check for audible clicking of both brakes when braking and releasing when reaching the open position.	☐
12	Functional check of the brakes and gearboxes	By pushing the wing in the home position with a force of approx. 50-100N, check the function of the brake, which must not slip. If the turnstile is unlocked in the home position configuration, the wings lock only after they are pushed.	☐
13	Measuring the power supply drop	Measure the voltage drop when opening the turnstile wings and if it is within the tolerance according to the installation instructions.	☐
14	Cleaning the cover apertures and plastic sensor covers	Must be done in a way that does not scratch the surface.	☐
15	Degreasing and polishing the turnstile glass wings	Use glass cleaning detergents.	☐
16	Basic check of the optical system for detection of persons.	The C2 sensors control electronics must show 0. Green LED must be lit up on all receiver bars. Green LED must flash on all transmitter bars.	☐
17	Checking individual optical sensors	Check all sensors using the diagnostic tool in the TCONF application according to chapter *SBCB sensors control electronics*.	☐
18	Checking the internal 485 line communication	Check the communication of all devices on the internal line using the **TDIAG** diagnostic program.	☐
19	Installation of up-to-date firmware	**After consulting the manufacturer** install the firmware MLU5V_._ _	☐
20	Perform implicit configuration	The condition is updating of the TCONF application	☐
21	Checking the malfunction detection displayed by the red LED 3 after initialization	After initialization, check the red signaling LED 3 of malfunctions detection on the MLU5.	☐
22	Inspection of detection after initialization in the listing of logs – sending of logs.	If any detected malfunction appears in logs after initialization, send these updated logs to the manufacturer.	☐
23	Checking the function by the turnstile tester	Disconnect the superior system and verify the turnstile functions.	☐

For quick removal of your turnstile's malfunction, it is necessary to fill out the *Claim Report Form* **when contacting the Service Department of the COMINFO Company. The report should indicate serial number of the turnstile in compliance with the production label, and a description of the malfunction. Send a video together with the completed Claim report form, which will clearly show the occurring malfunction and LED signalization of the electronics state before and after the initialization.**

EXAMPLE - CLAIM REPORT FORM

Product label information:

Name – type:	***EASYGATE-LX***
Serial number:	***0 9 0 0 1 2 3 4 5 6***

Information on the control electronics (MLU 5):

Serial number:	***5 4 3 0 0 0 4 6 7***

Your request:

1. *Turnstile sometimes remains open after passage of a person, and it may be freely passed through. It resets by loading another card. This malfunction occurs once a day (approximately 1000 passages).*
2. *Turnstile is independently powered by the supplied 400VA transformer. The supply cable with cross-section of 2.5 is 15m long.*
3. *The attached video shows a passage after which the turnstile remained open and then the following reset after loading a card.*
4. *Our TCONF version: 11. 4. 2017*
5. *Downloaded logs attached (no errors detected).*
6. *Connection check – OK.*
7. *Control signal from the superior system 500ms.*
8. *Wiring check – OK.*
9. *Both wings can be freely moved after switching off the power supply – OK.*
10. *Both wings stop in the home position after switching the power supply on and off – OK.*
11. *Checking the correct clearance - both brakes are audibly clicking*
12. *Checking the brake functionality – both brakes immediately stop when pushing the wings – OK.*
13. *During opening of wings, supply voltage drop to 22V was measured.*
14. *Apertures and covers of sensors cleaned from dust.*

15. *Turnstile wings cleaned using window cleaning detergent.*
16. *Optical system signalization – OK.*
17. *Checking individual optical sensors using the Sensor Test – OK.*
18. *Checking the communication in TDIAG application – OK.*
19. *Recommended firmware MLU5V6.3Z uploaded.*
20. *Implicit configuration performed.*
21. *Red LED does not signalize any error after initialization – OK.*
22. *Checking the logs report – logs did not register any error – OK.*
23. *All turnstile functions verified by the TURNSTILE TESTER and the malfunction did not occur – OK.*

All required steps were taken. The malfunction occurred again after two days of turnstile operation.

Customer:	*Company Ltd*		
Address:	*11 Business Park, London SW12 9RT, United Kingdom*		
Contact person:	*Jack Smith*	Telephone:	*4420 7777 7777*
E-mail:	*jack@company.com*	Date:	*19.11.2021*

CLAIM REPORT FORM

Product label information:

Name – type:

Serial number:

Information on the control electronics (MLU 5):

Serial number:

Your request:

Customer:

Address:

Contact person:

Telephone:

E-mail:

Date:

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