



# **NODER EE12**

## **IP CONTROLLER OF ACCESS CONTROL SYSTEM**

### **Technical Documentation**

# TABLE OF CONTENTS

<b>TABLE OF CONTENTS .....</b>	<b>2</b>
<b>1. Protection .....</b>	<b>3</b>
<b>2. Warning.....</b>	<b>3</b>
<b>3. Device description .....</b>	<b>3</b>
<b>4. System architecture .....</b>	<b>4</b>
<b>5. Device construction .....</b>	<b>5</b>
<b>6. Characteristic.....</b>	<b>6</b>
<b>7. Power connection .....</b>	<b>7</b>
7.1 Contoller built-in electrical protections .....	8
<b>8. Readers connection .....</b>	<b>9</b>
8.1 Connection via internal protection.....	9
8.2 Connection via DEC connector .....	10
<b>9. Scheme for connecting devices to the controller .....</b>	<b>11</b>
9.1 Single-leaf doors, one-sidedly monitored with EoL.....	11
9.2 Double doors, both-sidedly monitored.....	12
9.3 Lift module connection.....	13
9.4 Emergency door opener connection .....	14
9.5 Two-sided turnstile connection .....	15
<b>10. First start.....</b>	<b>16</b>
10.1 Network settings.....	17
<b>11. Configuration options.....</b>	<b>18</b>
11.1 Action.....	18
<b>12. LED informations on controller.....</b>	<b>20</b>
<b>13. Addressing readers.....</b>	<b>20</b>
<b>14. Further configuration.....</b>	<b>22</b>

## 1. Protection

Before installing this device, read these instructions. Failure to follow the instructions may result in malfunction or even damage to the equipment. The manufacturer is not liable for damages caused by negligence. Entering any modifications to the device that are not authorized by the manufacturer or performing independent repairs results in the loss of rights resulting from the warranty.

## 2. Warning

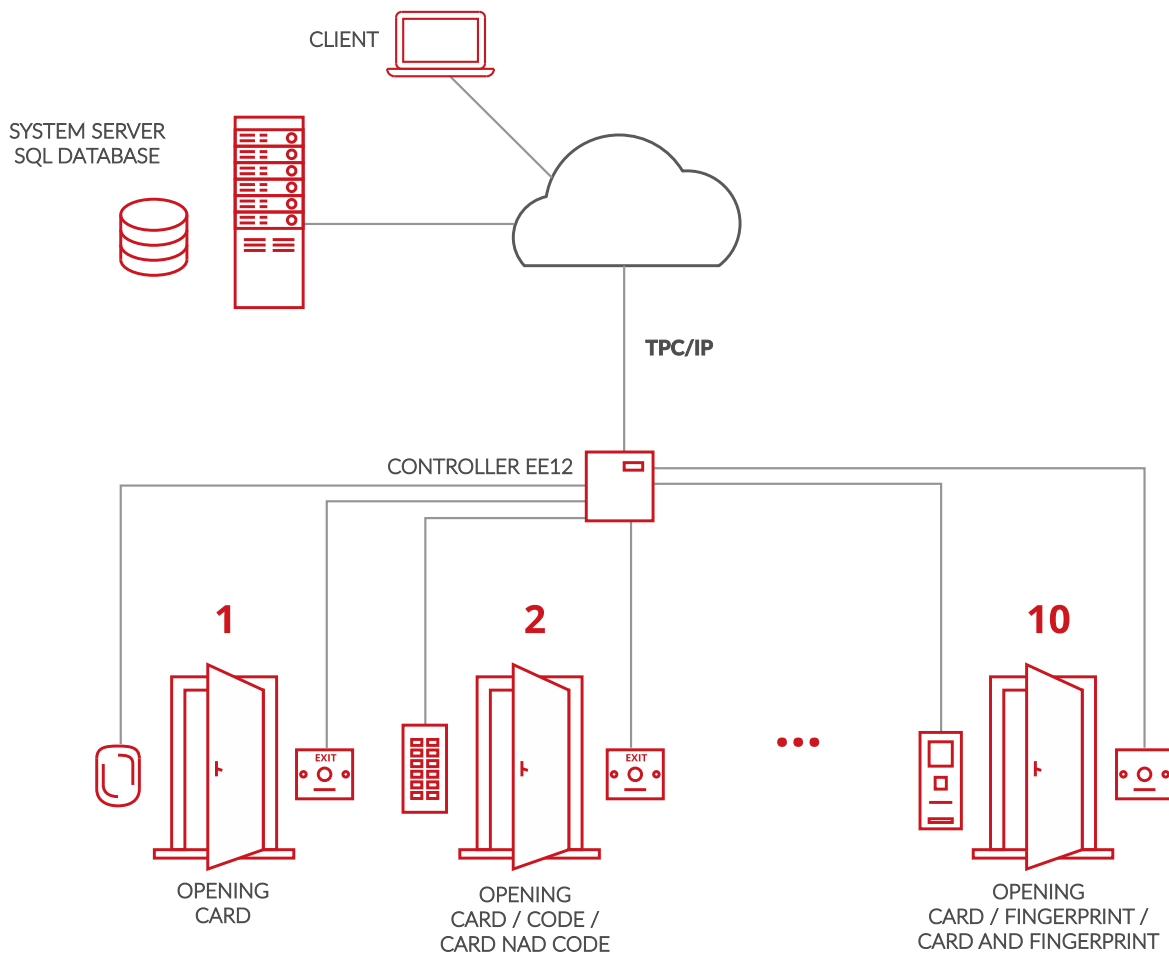
Electric device under voltage. Before performing any activities related to the power supply (connecting wires, installing the device, etc.), make sure that this device is not connected to the power supply. The assembly should be made by person with appropriate electrical qualifications.

## 3. Device description

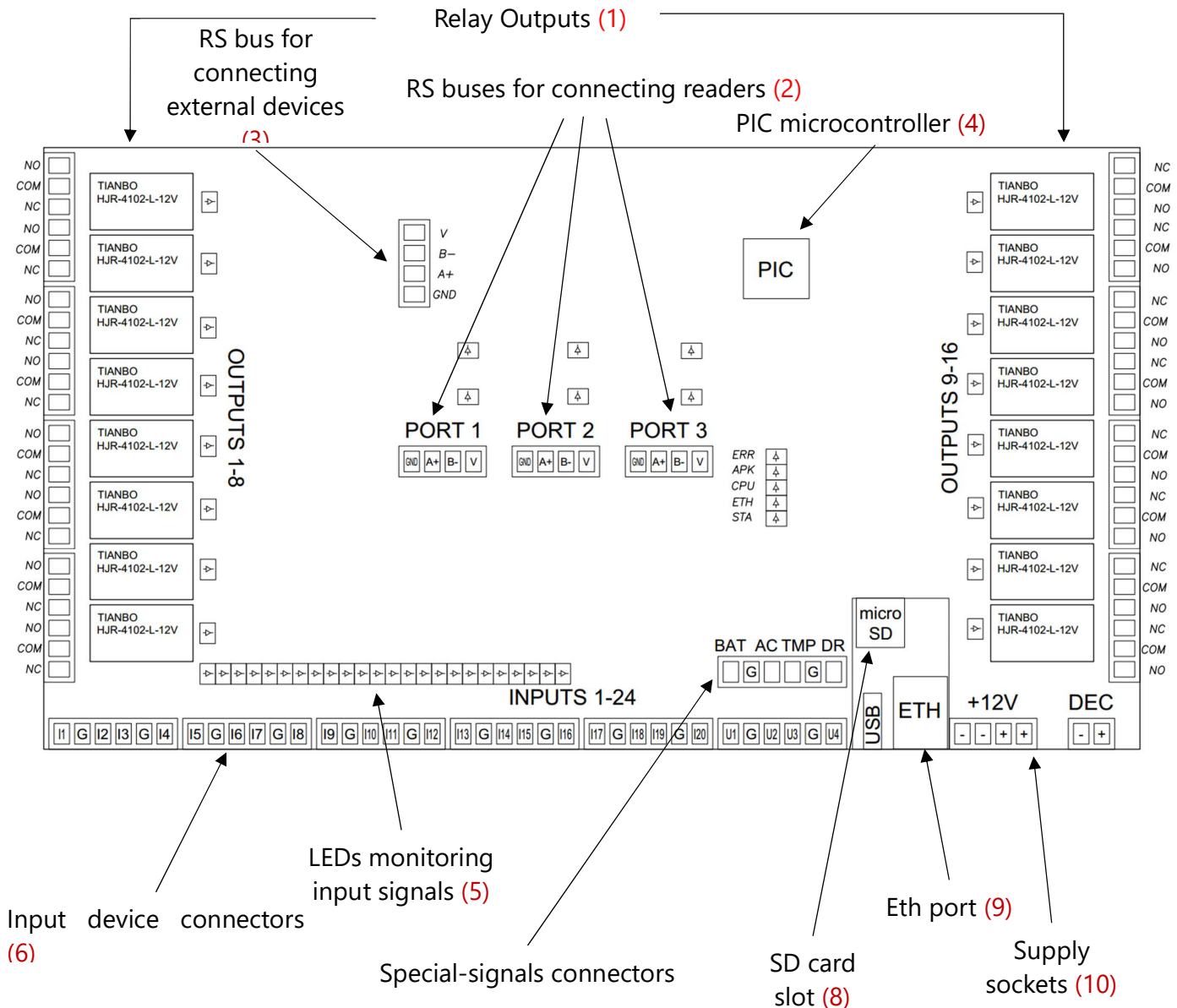
The IP Controller of the Access Control System is an advanced microprocessor I / O device for automated user identification. It can be used in building security systems, access control, time&attendance, hotel and recreational facilities. Leading and management system is **Axxon Intellect** platform.

## 4. System architecture

The EE12 controller operates in the client-server architecture in the Eth connection with the Axxon Intellect leading system. The controller has its own database enabling autonomous operation of the device in case of loss of network connection with the superior system and the possibility of event registration. After reconnection, the central system of the events is automatically downloaded from the controller.



## 5. Device construction



The device consists of a printed plate with microprocessors on it (4), signaling diodes (5), socketed plugs with connectors (6), transmitters (1), connection ports (9) and others. In SD card slot (8), card should be installed with properly prepared software. User database and system events are stored on it. Capacity depends on the number of users served in offline mode and the number of events stored by the controller. The relay outputs (1) are used for control reverse-locks, electromagnetic switches, gates and other system executive elements.

## 6. Characteristic

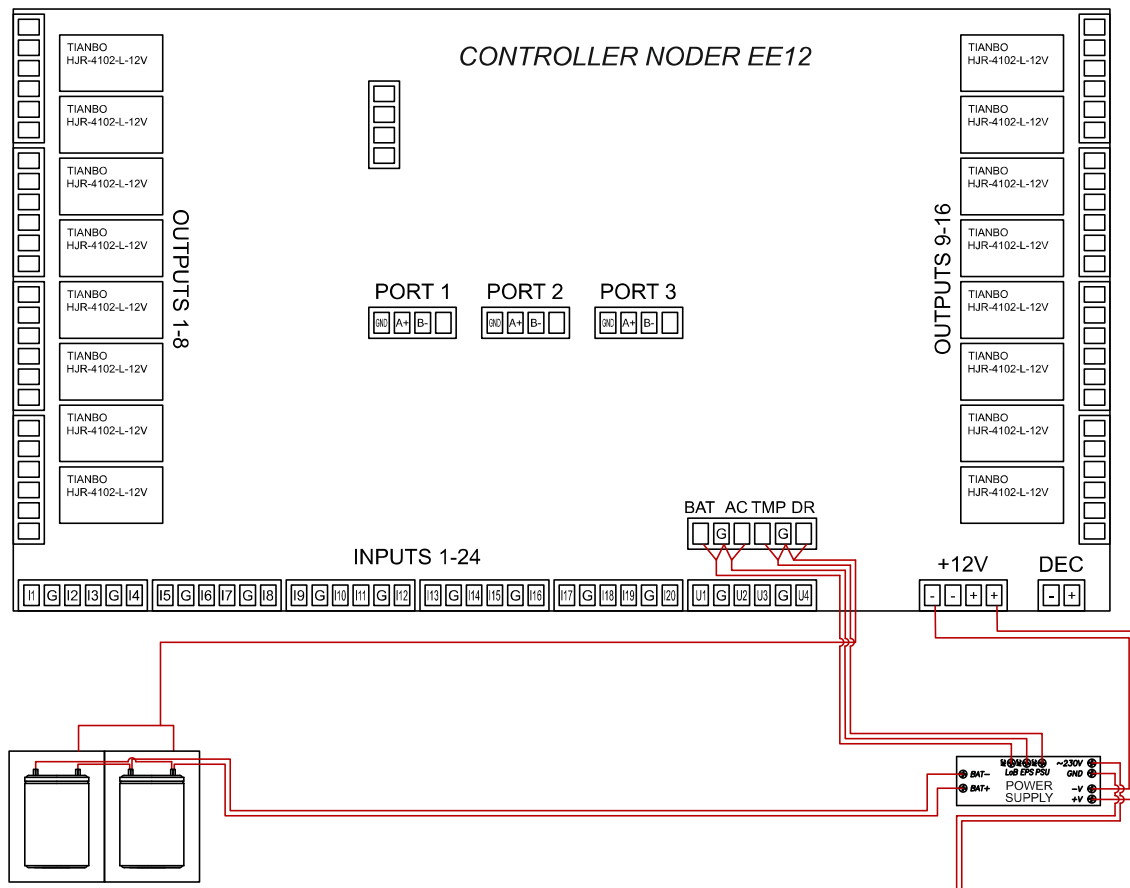
<b>CONTROLLER TYPE</b>	<b>EE12</b>
<b>SUPPORTED PASSING TYPES</b>	10 passes with one-sided access control / 5 passes with two-sided access control (any combination possible)
<b>NUMBER OF CARDS</b>	1 024 000 <sup>1</sup>
<b>NUMER OF STORED EVENTS</b>	2 048 000 <sup>1</sup>
<b>FUNCTION OF PREVENTING RETRIEVE AND ZONE CONTROL</b>	If connected to the server – global AntiPassBack. In autonomic operating mode – local AntiPassBack.
<b>UPDATE OF DRIVER SOFTWARE</b>	Remote

<sup>1</sup> Values are adequate to the built-in memory of the device.

<b>Technical Specifications</b>	
<b>NUMBER OF SUPPORTED READERS</b>	Up to 12
<b>SUPPORTED READER INTERFACE</b>	RS-485 Native AES with encapsulation, OSDPv2
<b>COMPATIBLE READERS TYPES</b>	Any contactless, biometric, bar, magnetic, etc.
<b>COMMUNICATION WITH READERS</b>	3x RS-485
<b>COMMUNICATION WITH SERVER</b>	LAN/WAN
<b>PROGRAMMABLE INPUTS</b>	20 parameterized inputs (reed switches, buttons, alarm detectors, etc itp.)
<b>PREDEFINED INPUTS</b>	4 parameterized inputs (No AC [230 V power supply], low battery voltage, tampering, housing opening)
<b>PROGRAMMABLE OUTPUTS</b>	16 relay outputs NO/NC, 3 A, 24 VDC (electric strike, tripod, signaller, etc.)
<b>CLOCKWORK POWER SUPPLING</b>	CR battery
<b>SUPPLY VOLTAGE</b>	12 VDC
<b>ENERGY CONSUMPTION (WITHOUT READERS)</b>	<u>~150mA, max 280mA (starting the device)</u>
<b>DIMENSIONS</b>	215 x 115 x 28 mm (8.47 x 4.53 x 1.10 in.)
<b>WEIGHT</b>	290 g (0.64 lb)
<b>WORKING TEMPERATURE</b>	-10 °C - +55 °C
<b>STORAGE TEMPERATURE</b>	-20 °C - +70 °C
<b>AMBIENT HUMIDITY</b>	<80%
<b>NORMS</b>	CE

## 7. Power connection

Controller should be powered from a 12 V DC buffer power supply. The construction of the controller's power connector allows to power further electronic devices (such as controllers, modules, etc.). Do not connect inductive devices to the connector, as they may cause power disturbances. These devices should be directly connected to the power supply terminals.



Special inputs can be freely configured and used, for example, as reed contacts, but their default purpose shown in the above example is:

- BAT – signal of discharged batteries (input 21)
- AC – no 230 V power supply (input 22)
- TMP – damage 12V DC power supply (input 23)
- DR – serial connection of all tamper cabinet doors and wall mounting (input 24)

## 7.1 Contoller built-in electrical protections

The controller is equipped with overcurrent protection using PTC polymer fuses with the following loads:

- Power input: 1.5A
- Power outputs of the RS485 bus (PORT1, PORT2, PORT3 and PORT4): 0.75A

and overvoltage protections using Zener diodes on RS485 buses and digital / analogue inputs.



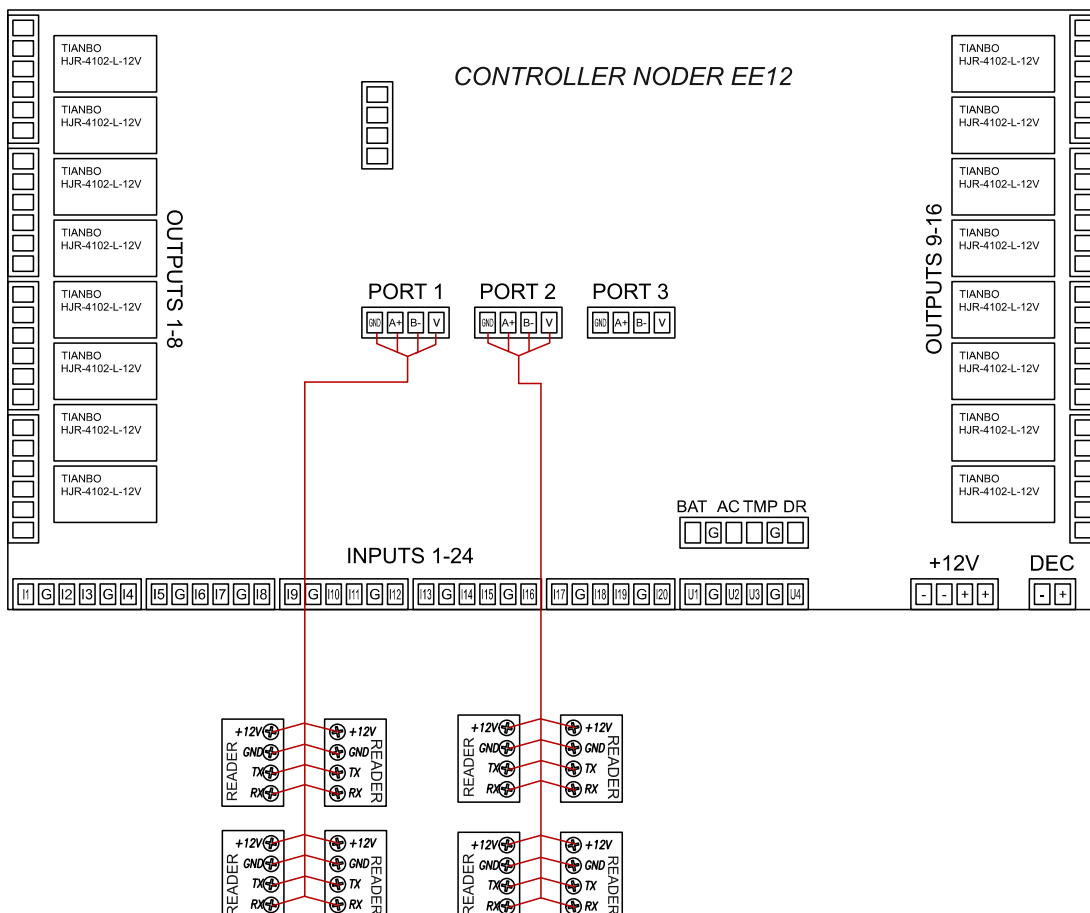
## 8. Readers connection

Ports 1-3 are used to connect readers. These are RS485 bus ports and enable connection of up to 4 readers to one port. Ports can be used to connect to the reader via OSDPv2. The physical connection of the readers is the same as for RS485. Readers should be connected in parallel. The bus should be from the reader to the reader, but it is permissible to combine readers in so-called "star" for short distances. The maximum length of the bus must not exceed 1200m. In the case of a several hundred meter bus, appropriate measurements and line adjustment should be performed with terminating resistors. For connecting the readers, UTP cat. 5e cables can be used, for longer distances it is recommended to use shielded cables. The cross-section of the wires should be adjusted to the distance so as not to exceed the permissible voltage drops for the readers used.

### 8.1 Connection via internal protection

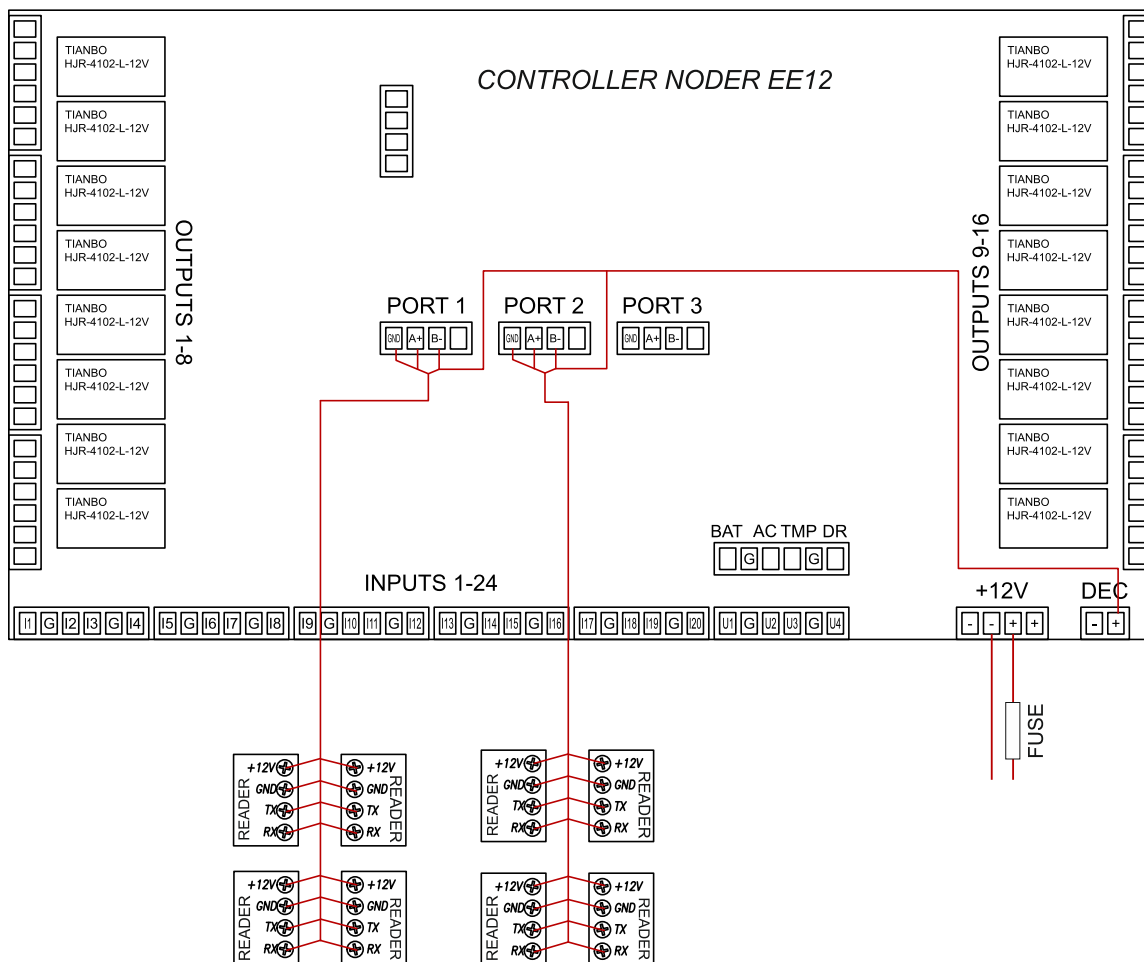
The RS485 bus terminals (V, GND) can be used to connect the readers.

In case of a short circuit on the bus, the built-in overcurrent bus protection (0.75A) or controller (1.5A) will work.



## 8.2 Connection via DEC connector

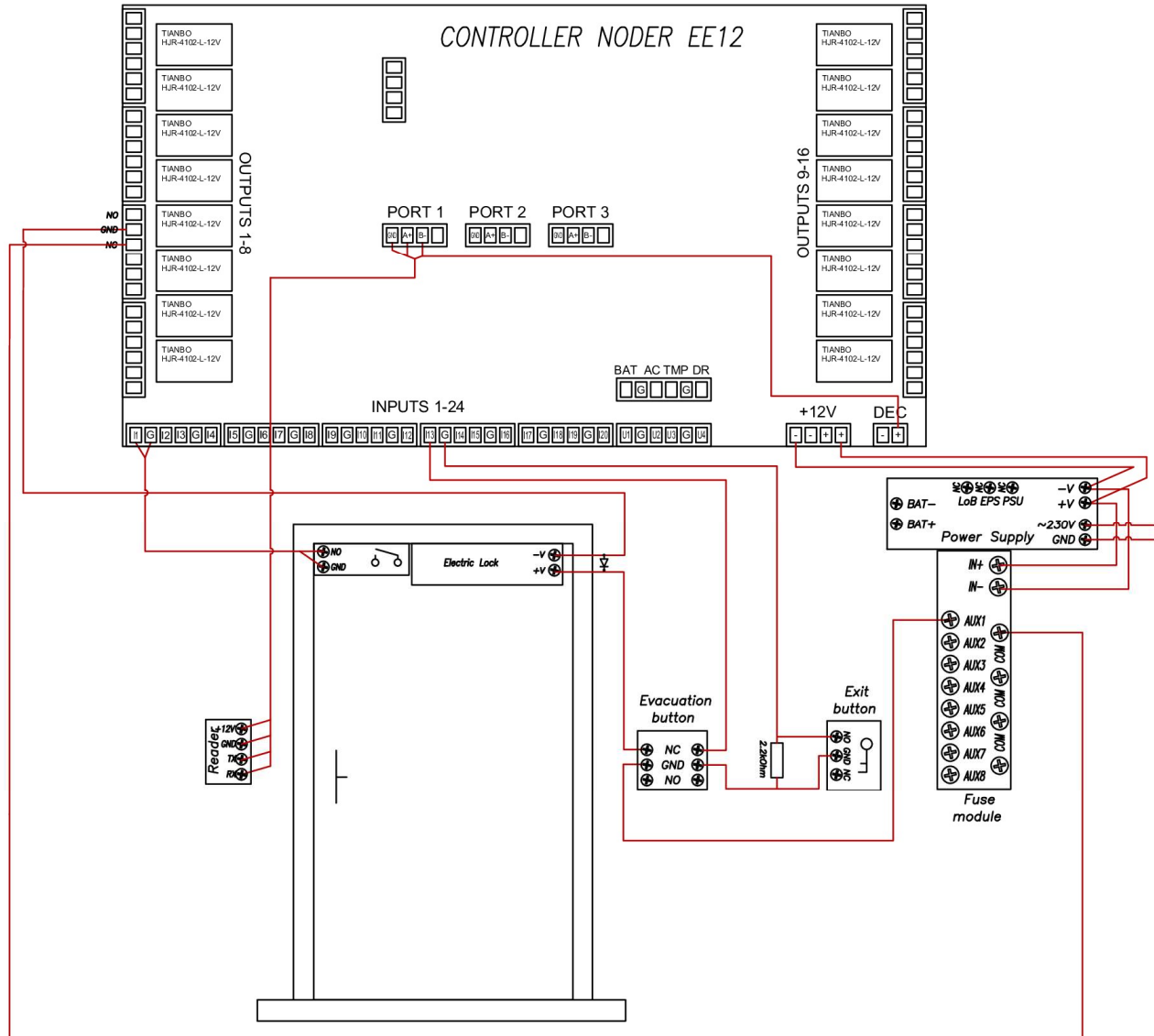
As an alternative to supplying readers, you can use the DEC voltage connector (12V DC), which makes it possible to reset the readers' power supply if necessary (eg when addressing Noder serial readers which are in the addressing mode for the first 10 seconds after connecting the power supply). However, this requires additional protection, because the current directly supplied to the power input of the + 12V controller is without additional protection transferred to the DEC connector.



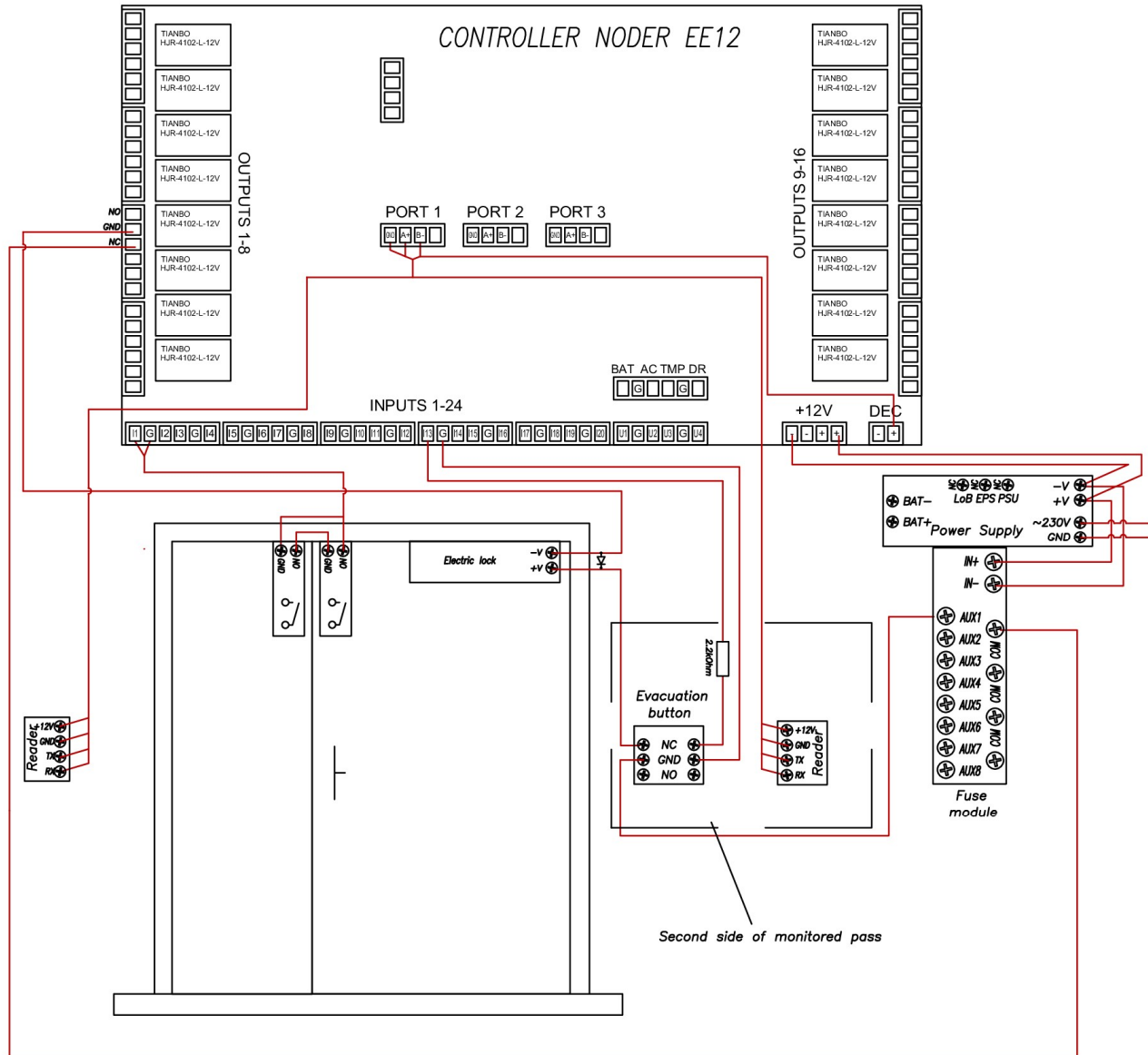
Value of protection should be adjusted to the number and power of connected readers. The protection used must not exceed 2A.

## 9. Scheme for connecting devices to the controller

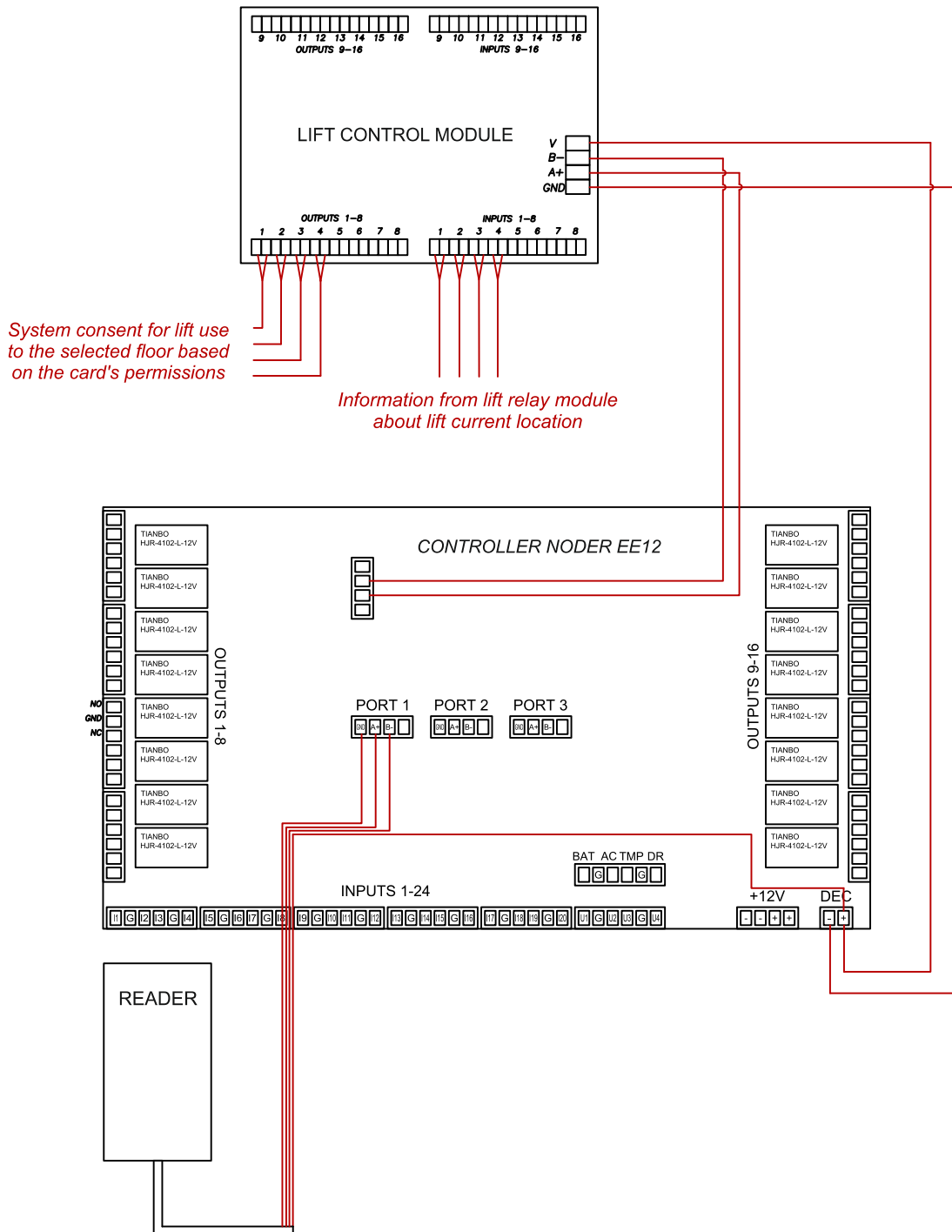
### 9.1 Single-leaf doors, one-sidedly monitored with EoL



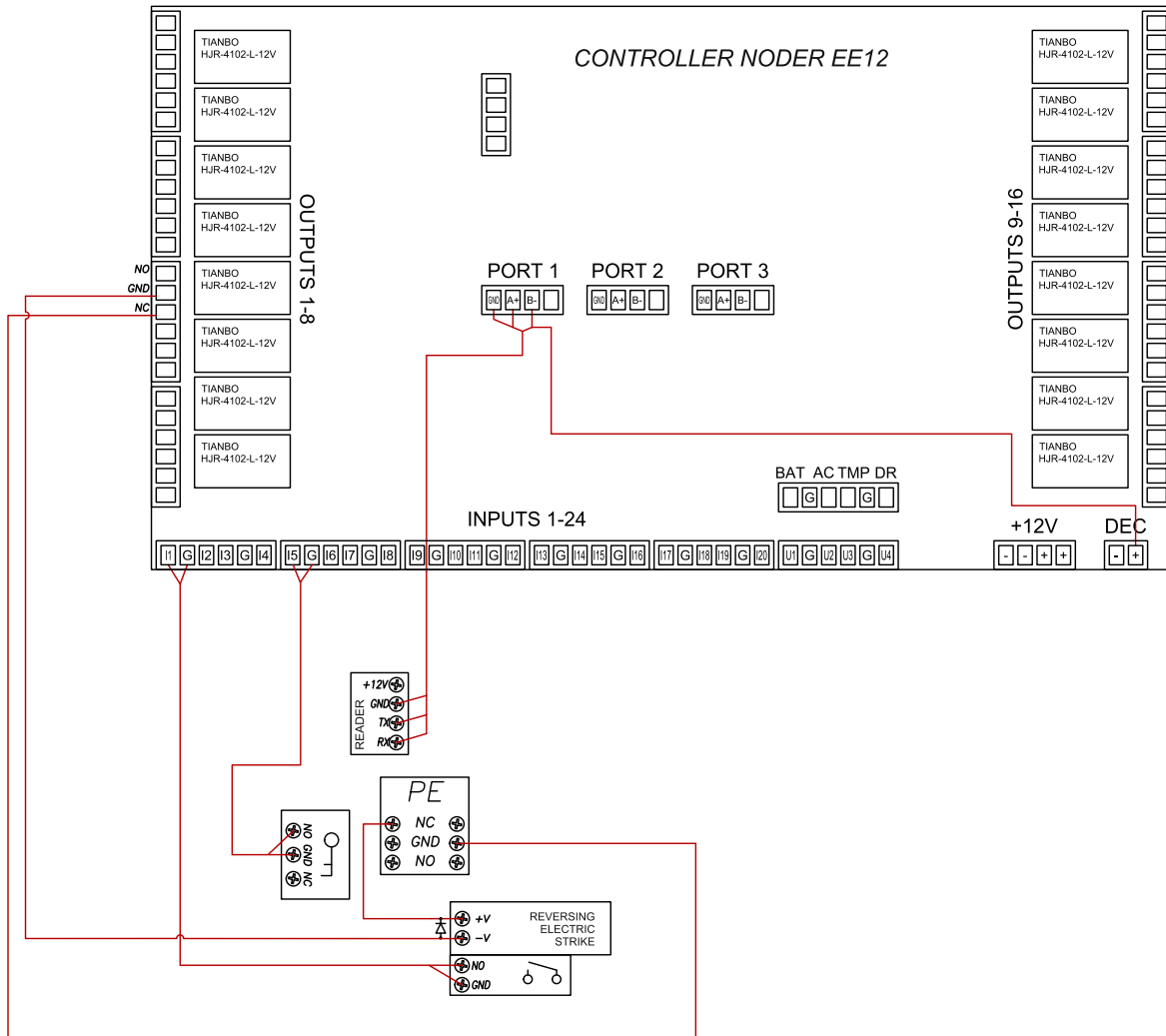
## 9.2 Double doors, both-sidedly monitored



### 9.3 Lift module connection

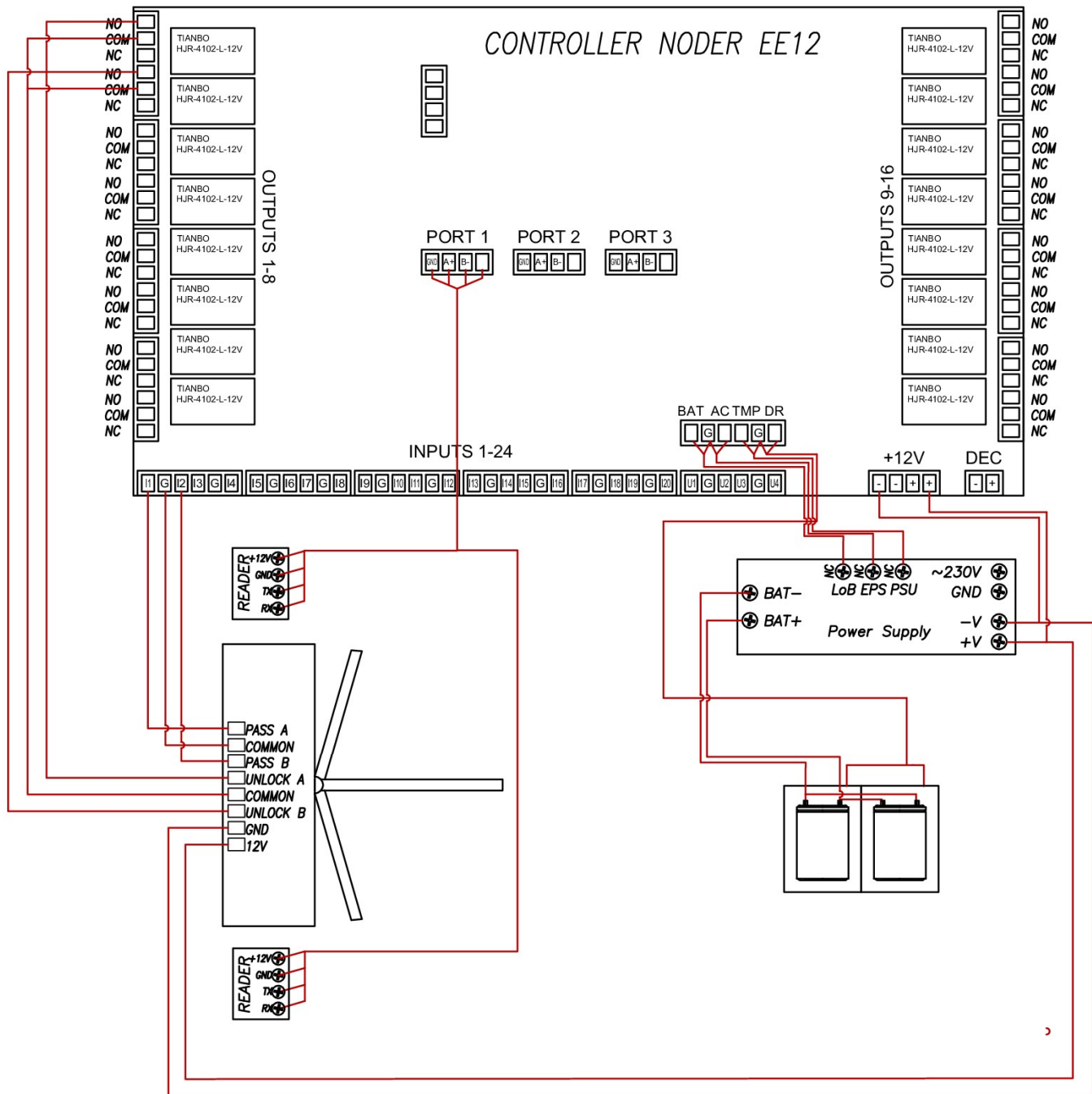


## 9.4 Emergency door opener connection



If it is necessary to use a collective button, connect the power supply of all reversing electric strikes to one module and, similarly to the above, break the power supply of the entire module with the collective button.

## 9.5 Two-sided turnstile connection

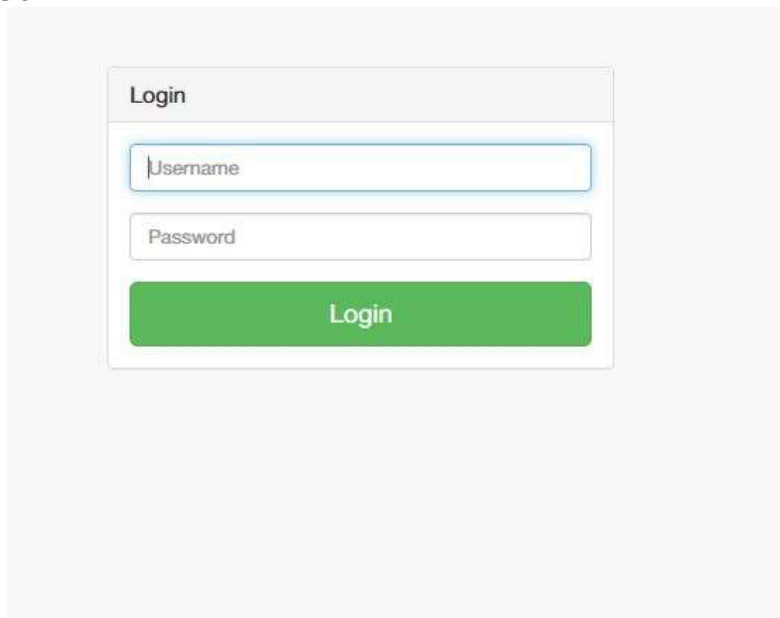


## 10. First start

The first time you start the controller, you must give it a unique IP address for your network. By default, the controllers are assigned the address 192.168.117.230 in the network with the mask 255.255.255.0 and the gate 192.168.117.1. You need to set up your computer in this network and then log in using the web browser.

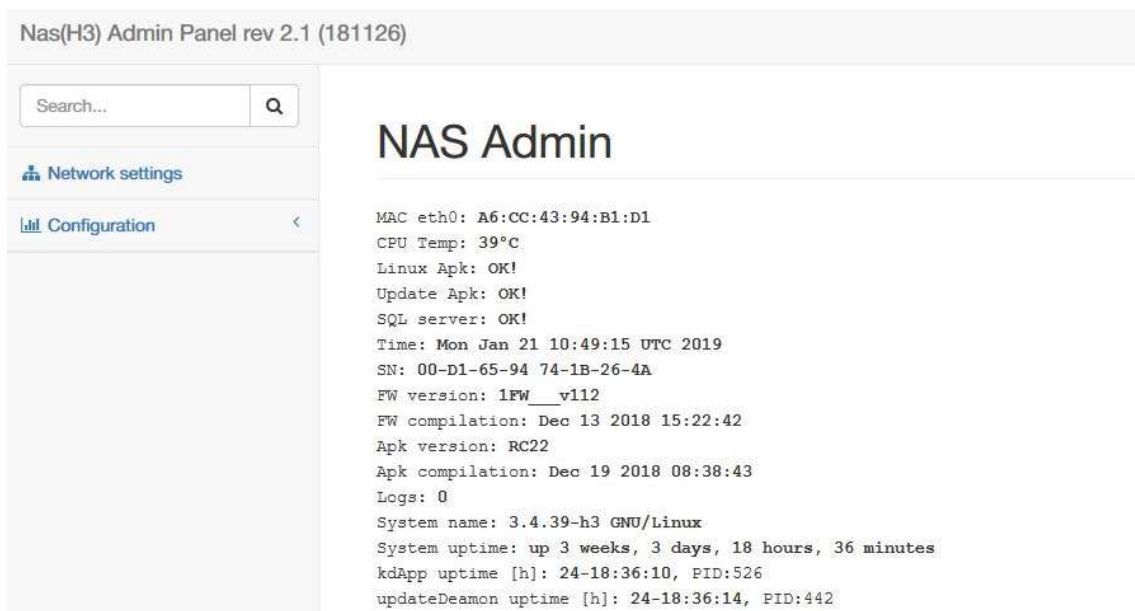
Default login: **admin**

Default password: **123456**



A screenshot of the login interface. It features a light gray background with a white login box. The box is titled "Login" and contains two input fields: "Username" and "Password". Below these fields is a prominent green button labeled "Login".

After logging in, an information page about current state of the controller will be displayed:



The screenshot shows the "NAS Admin" interface. At the top, it reads "Nas(H3) Admin Panel rev 2.1 (181126)". Below this is a search bar and a sidebar with two main menu items: "Network settings" and "Configuration". The main content area displays the following system information:

```

MAC eth0: A6:CC:43:94:B1:D1
CPU Temp: 39°C
Linux Apk: OK!
Update Apk: OK!
SQL server: OK!
Time: Mon Jan 21 10:49:15 UTC 2019
SN: 00-D1-65-94 74-1B-26-4A
FW version: 1FW_v112
FW compilation: Dec 13 2018 15:22:42
Apk version: RC22
Apk compilation: Dec 19 2018 08:38:43
Logs: 0
System name: 3.4.39-h3 GNU/Linux
System uptime: up 3 weeks, 3 days, 18 hours, 36 minutes
kdApp uptime [h]: 24-18:36:10, PID:526
updateDeamon uptime [h]: 24-18:36:14, PID:442
    
```

On the left side there are tabs for network settings options and configuration options.



## 10.1 Network settings

To change the address, select **Network settings** and then enter the new network settings

### Network settings

Interface eth0

192.168.1.39

Address IP

192.168.1.254

Gateway

255.255.255.0

Mask

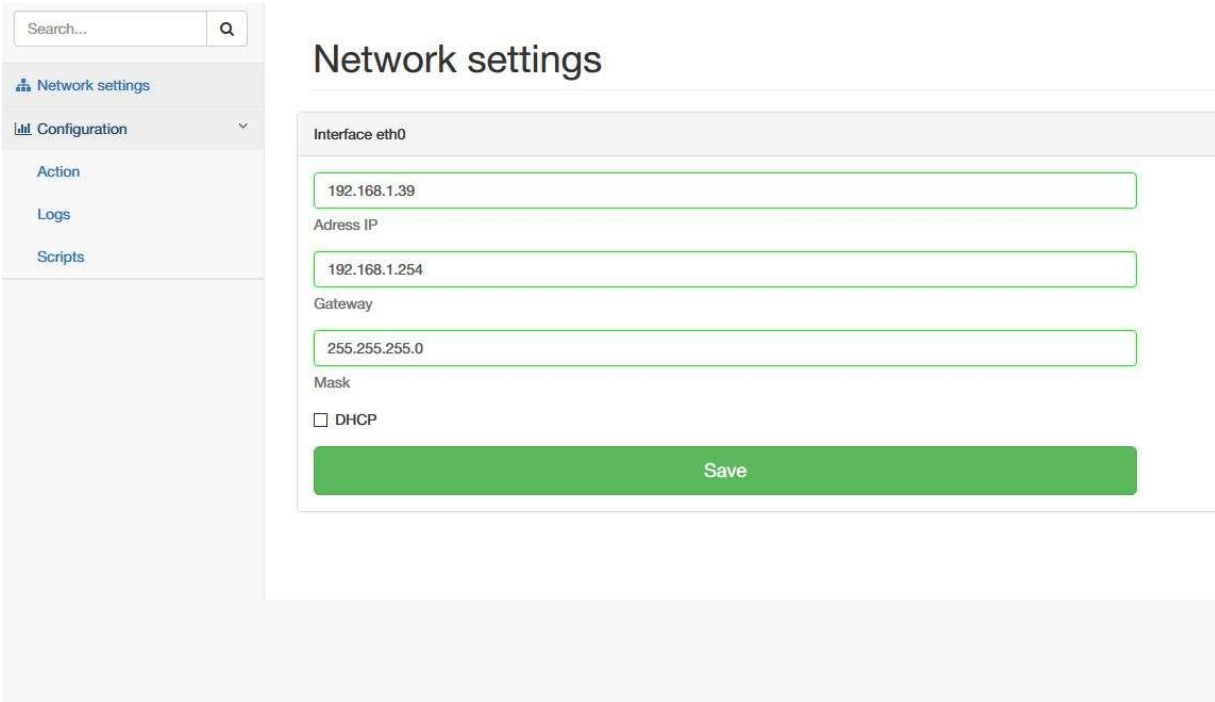
DHCP

Save

Controller should have a permanent IP address, if there is no security configuration on the network side to always give the same address to the device, the DHCP option should be deselected. If it is checked, the address setting options will be grayed out, and the address assignment option will be taken over by the DHCP controller. After setting the destination address, you need to change the computer's network settings and connect to the new controller's IP address.

## 11. Configuration options

Under the **Configuration** tab, additional tabs are available: **Action, Logs and Scripts**



### 11.1 Action

The **Action** tab gives you the ability to restart device elements such as:

- OS restart* – operating system restart
- Apk restart* – controller application restart
- MB FW* – PIC microprocessor software update from the internal memory of the controller
- Load defaults* – return to the factory settings of the controller
- db Backup* – creating a copy of the internal security of the controller's database
- db Restore* – restoring the database from a backup copy saved to the internal memory

Action



From the system reboot option, the application should be used in the absence of proper functioning of one of them. The information panel appears the first time you log in to the controller, it is also available by clicking on the name of the panel.

Nas(H3) Admin Panel rev 2.1 (181126)

## NAS Admin

```

MAC eth0: A6:CC:43:94:B1:D1
CPU Temp: 39°C
Linux Apk: OK!
Update Apk: OK!
SQL server: OK!
Time: Mon Jan 21 10:49:15 UTC 2019
SN: 00-D1-65-94 74-1B-26-4A
FW version: 1FW__v112
FW compilation: Dec 13 2018 15:22:42
Apk version: RC22
Apk compilation: Dec 19 2018 08:38:43
Logs: 0
System name: 3.4.39-h3 GNU/Linux
System uptime: up 3 weeks, 3 days, 18 hours, 36 minutes
kdApp uptime [h]: 24-18:36:10, PID:526
updateDeamon uptime [h]: 24-18:36:14, PID:442
                
```

# NAS Admin

```

MAC eth0: A6:CC:43:94:B1:D1
CPU Temp: 40°C
Linux Apk: OK!
Update Apk: OK!
SQL server: OK!
Time: Mon Jan 21 10:45:35 UTC 2019
SN: 00-D1-65-94 74-1B-26-4A
FW version: 1FW__v112
FW compilation: Dec 13 2018 15:22:42
Apk version: RC22
Apk compilation: Dec 19 2018 08:38:43
Logs: 0
System name: 3.4.39-h3 GNU/Linux
System uptime: up 3 weeks, 3 days, 18 hours, 32 minutes
kdApp uptime [h]: 24-18:32:30, PID:526
updateDeamon uptime [h]: 24-18:32:34, PID:442
                
```

If there is a status other than **OK** in **Linux Apk** position, the application should be restarted first:  
**Configuration – Action – Apk restart**

If in **SQL server** position status is other than **OK** or above did not solve the problem, you should restart the OS:

**Configuration – Action – OS restart**

## 12. LED informations on controller

The controller is equipped with diodes informing about the operating status of the device. LEDs:

**ERR**, red, lighting or blinking means that the hardware error of the device has been detected

**APK**, green, blinking means correct operation of the controller application

**CPU**, in the bootloader mode blinking alternately with the STA diode, means the bootloader mode

**ETH**, in the bootloader mode, receive the FW frame

**STA**, works together with the CPU as described above, and blinks when the microcontroller is working properly

## 13. Addressing readers

Readers connected to the RS485 bus must be addressed. Addressing of readers is carried out with programming cards available from the manufacturer. The cards are available in a set with addresses from 1 to 4. A maximum of 4 readers can be addressed on each bus port. Addresses are as follows:

Readres address	Port	Logical address in controller
1	1	1
2	1	2
3	1	3
4	1	4
1	2	5
2	2	6
3	2	7
4	2	8
1	3	9
2	3	10
3	3	11
4	3	12

The reader is in a mode that allows addressing for 10 seconds after connecting it to the power supply. After applying the addressing card, the reader will reprogram and then reboot and indicate the green flash of the diode and sound its address one by one for the first address, twice for the second, etc. If the controller does not accept the address it will be signaled by a blink of the red diode.

Reader with an already assigned address immediately after connecting to the power supply will always signal its address with the sound and flash of the green diode.

## 14. Further configuration

After connecting all devices: readers, buttons, reed switches, power supplies and others and addressing the readers with special address cards, you should collect information about the devices and ports to which they are connected and go to device configuration in the Intellect platform.

Configuration of the device in the Intellect platform is described in the document:

***Instructions of Noder Access Control System administrator***