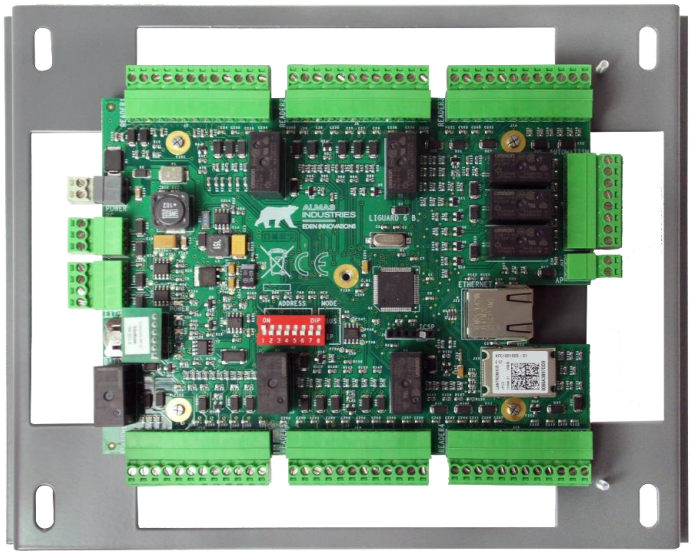
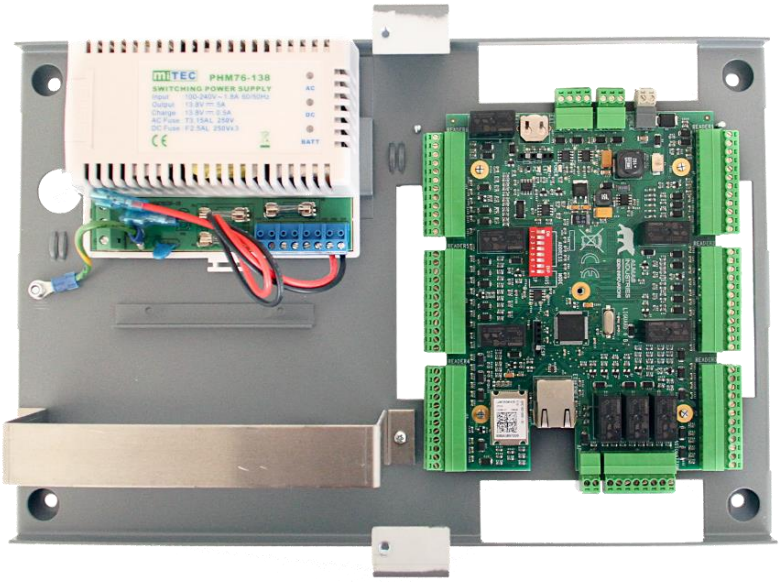
Access control

LIGUARD 6® with power supply
LIGUARD 6® without power supply

Technical manual





Contents

Package contents

When you receive your LIGUARD 2® controller, you should find the following items in the package. If any items are missing, please notify your distributor.

1) LIGUARD 6® with power supply

- 1 case (containing power supply + controller)
- 4 diodes
- 1 technical manual
- Cables to connect the backup battery

2) LIGUARD 6® without power supply

- 1 case (containing the controller)
- 4 diodes
- 1 technical manual

Warranty

Eden innovations guarantees that its products will be free from defects in material and workmanship, under normal use, for a minimum period of 24 months from the date of manufacture indicated on the model label or from the date of invoice.

Eden Innovations does not guarantee:

- Products on which the serial number has been damaged, altered or removed.
- Products that are not accompanied by a copy of the original invoice or products for which the data on the original invoice was in any way modified or deleted.
- Damage, deterioration or malfunction resulting from the following situations:

  Accident, vandalism, abuse, misuse, neglect, fire, water/liquids, lightning, or other natural damages, unauthorized modification of the product, or inability to follow the instructions supplied with the product.
- Repair or attempted repair by anyone not authorized by Eden Innovations.
- Damage due to product delivery.
- External causes to products such as fluctuations or power outages.
- Normal wear.
- Any other cause which does not relate to a product defect.
- Exposure to an excessively dusty and/or humid environment.
- Products not manufactured by Eden Innovations.

Information and recommendations

3) Cabling recommendations

The cables used to connect readers, the network, and other peripherals must be installed in accordance with the instructions for Level 2 (protected environment) of standard NF EN 61000-4-4.

4) Safety instructions

To avoid any risk of electrical shock, **ANY WORK** must be performed with **POWER OFF**.
A disconnecting device (switch for example) with a value of 16 A must be installed for this purpose outside the equipment, integrated in the building installation.
Works when the electrical power is on is only authorized when power off is impossible.
Any work should only be carried out by qualified personnel.
The electrical installation must be done according to standard NF C- 15-100.
Non-compliance with these instructions can cause death or serious injury and damage irremediably the device.

5) Standards, guidelines and environmental protection and public health

This product complies with standards EN 60950-1: 2006 + A11: 2009; CEM: EN55022, EN55024.
EDEN INNOVATIONS manufactures all its products in compliance with environmental directives RoHS and WEEE.
EDEN INNOVATIONS recycles end-life products through its recycling process.

CE RoHS 2002/95/CE

When connecting readers, doors, sirens, etc. be careful not to bring dangerous voltage to the controller.

6) Safety conditions relating to fire and liability

Never connect badge or biometric reader at a critical point (exit door, barrier, lift gate) if no other exit is available, in order to comply with current regulations relating to fire and life safety. These rules may vary from one place to another and the use of any electronic equipment to control a door must always have prior approval from local authorities. For example, the use of output buttons is not allowed in all towns.
In most cases, anyone must be able to get out of the building using a very simple single action device, even if they are not aware of steps to follow. This is a safety requirement.
Make sure to get all the necessary written authorizations. Accept no oral clearance, they are not valid.
EDEN INNOVATIONS recommends to never use its equipment as first warning systems or monitoring. These equipment must comply with current regulations concerning fire and safety. The installer is responsible for regularly checking the system and informing the end user about test procedures to be performed daily. In case of problems, failure to observe this requirement of regular verification may engage the responsibility of the installer with its customer.

Technical characteristics

Case without power supply:

Weight ..... 1,5 kg
Dimensions ..... L: 230 x l: 190 x h: 45 mm

Case with power supply:

Weight ..... 3.2 Kg
Dimensions ..... L: 350 x l: 230 x h: 95 mm

Built-in 230 V power supply:

Voltage ..... 100V - 240V
Frequency ..... 50Hz - 60Hz
Output voltage 13.8V
Maximum output current 5A
Temperature ..... 0°C +40°C
Battery connection ..... 12V, 7Ah (L:65 x l:151 x h:99 mm)
Primary fuse (F1) 5x20 T3.15AL
Output 3 fuse (F2) 5x20 F2.5AL
Output 2 fuse (F3) ..... 5x20 6.3A aM
Output 1 fuse (F4) 5x20 F2.5AL
Battery fuse (FBat) ..... 9A, resettable

Controller:

Voltage ..... 12V - 14V
Maximum consumption 200mA
Temperature ..... 0°C +40°C
Fuse F1 ..... 0.75 A resettable

Door control and automation:

Door control relay ..... 30V max & 3A max
Automation relay ..... 30V max & 3A max
Open collector output ..... 45V max & 100mA max
Maximum cable length 150m

RS485 Bus Extension, Wiegand/Clock & Data readers:

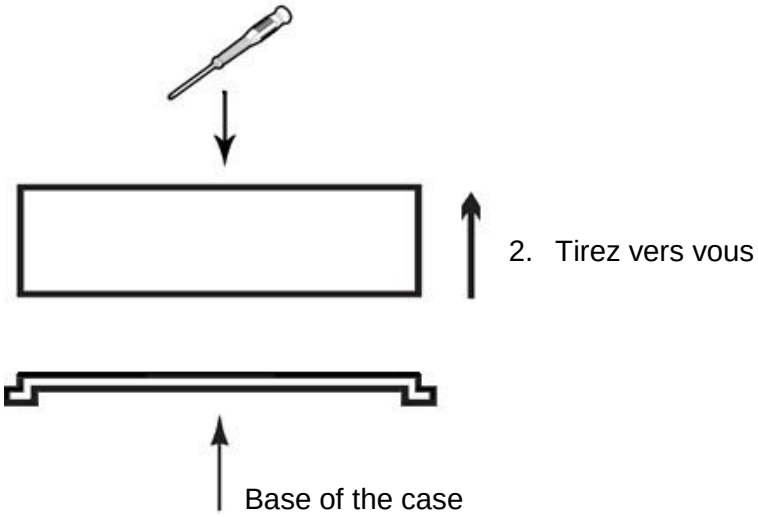
Maximum consumption ..... 2.5A for the readers and the extension bus
Maximum consumption ..... 2.5A per reader
Maximum consumption ..... 2.5A for the extension bus
Green LED ..... 45V max & 100mA max

Installing the case

7) LIGUARD 2® without power supply

a. <u>Opening the case</u>

1. Unscrew the screw



b. <u>Installing the case</u>

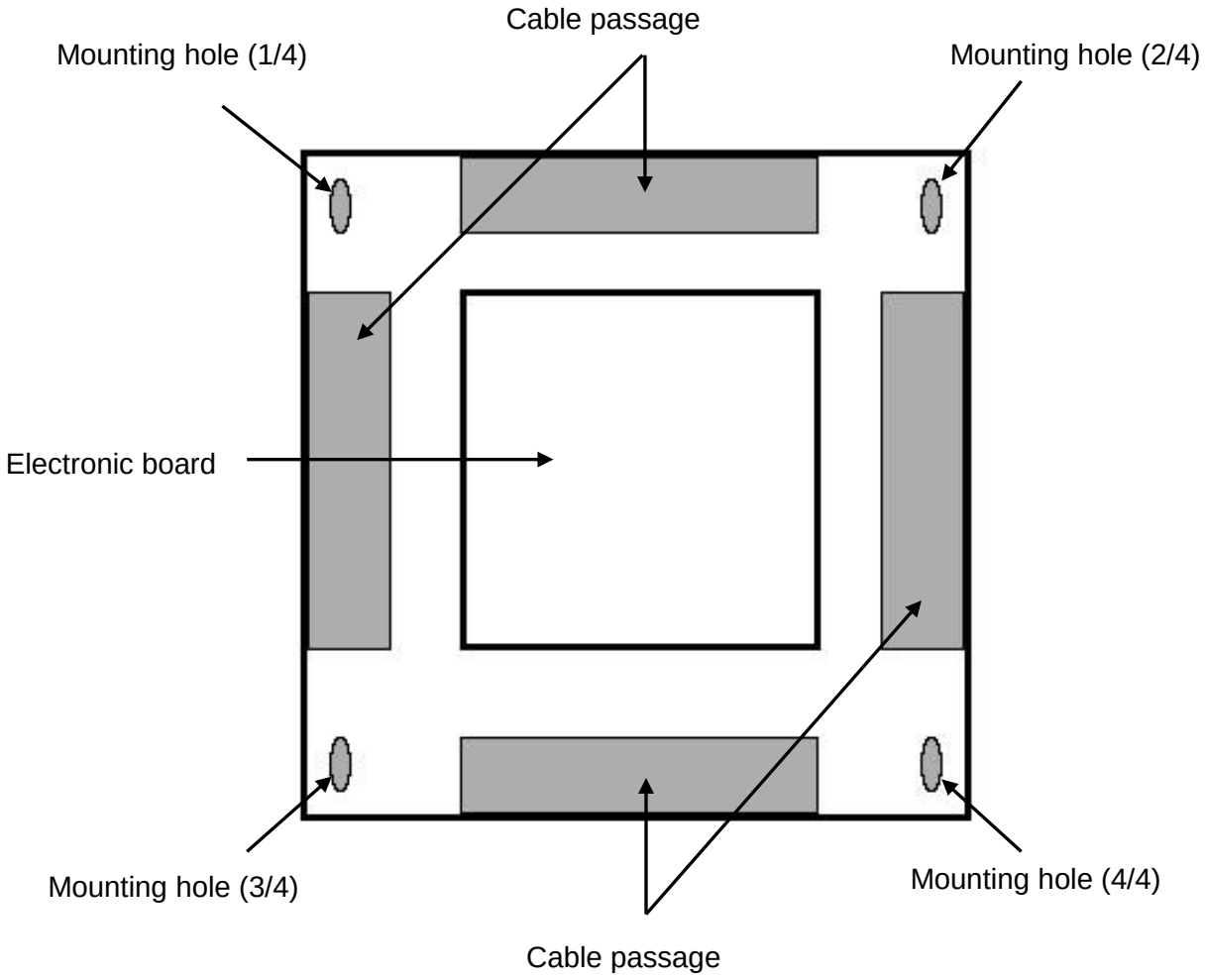
Fix the box using the 4 mounting holes of the base.

The case can be installed on the following types of support:

- **Solid**:
  - wood (round headed screws made of galvanised steel. Dimensions : Ø 4 x 16 mm)
  - concrete (nylon plugs Ø 4x40 + stainless steel screws M4x40)
- **Hollow**:
  - brick, plasterboard (MOLLY metal plugs. Dimensions: Ø 4 x 33 mm. With M4x35 screws)

c. <u>Power supply cabling</u>

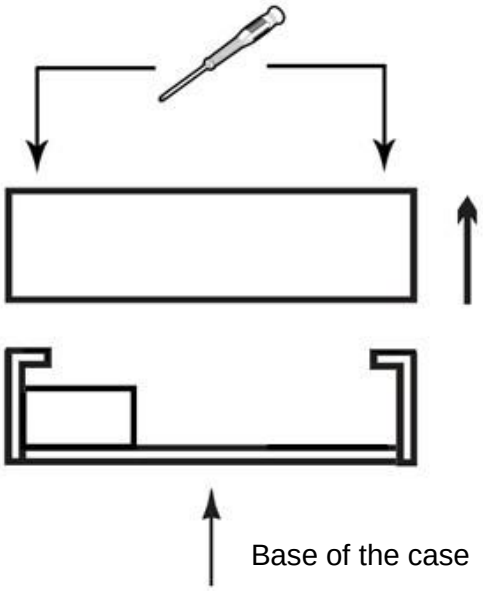
Power to the controller must be 12V.


Cable passage
Mounting hole (1/4)
Mounting hole (2/4)
Electronic board
Mounting hole (3/4)
Mounting hole (4/4)
Cable passage

8) LIGUARD 6 ® with power supply

d. Opening the case

1. Unscrew the scews



2. Pull towards you

Base of the case

e. Installing the case

Fix the box using the 4 mounting holes of the base.

The case can be installed on the following types of support:

- **Solid**:
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  - concrete (nylon plugs Ø 4x40 + stainless steel screws M4x40)
- **Hollow**:
  - brick, plasterboard (MOLLY metal plugs. Dimensions: Ø 4 x 33 mm. With M4x35 screws)

f. Power supply cabling

The supply cable must be made of three conductors (with a green/yellow earth cable) and have the following characteristics:

Rated current.....1.52 A
Cross-section .....1.5 mm²

- Strip between 7 and 7.5 mm.
- Put cuffs in place.
- Use a double setting.
- Keep the 3 wires as close to the domino as possible with the help of a screw clamp.

Connect the power cable to the power block as follows:

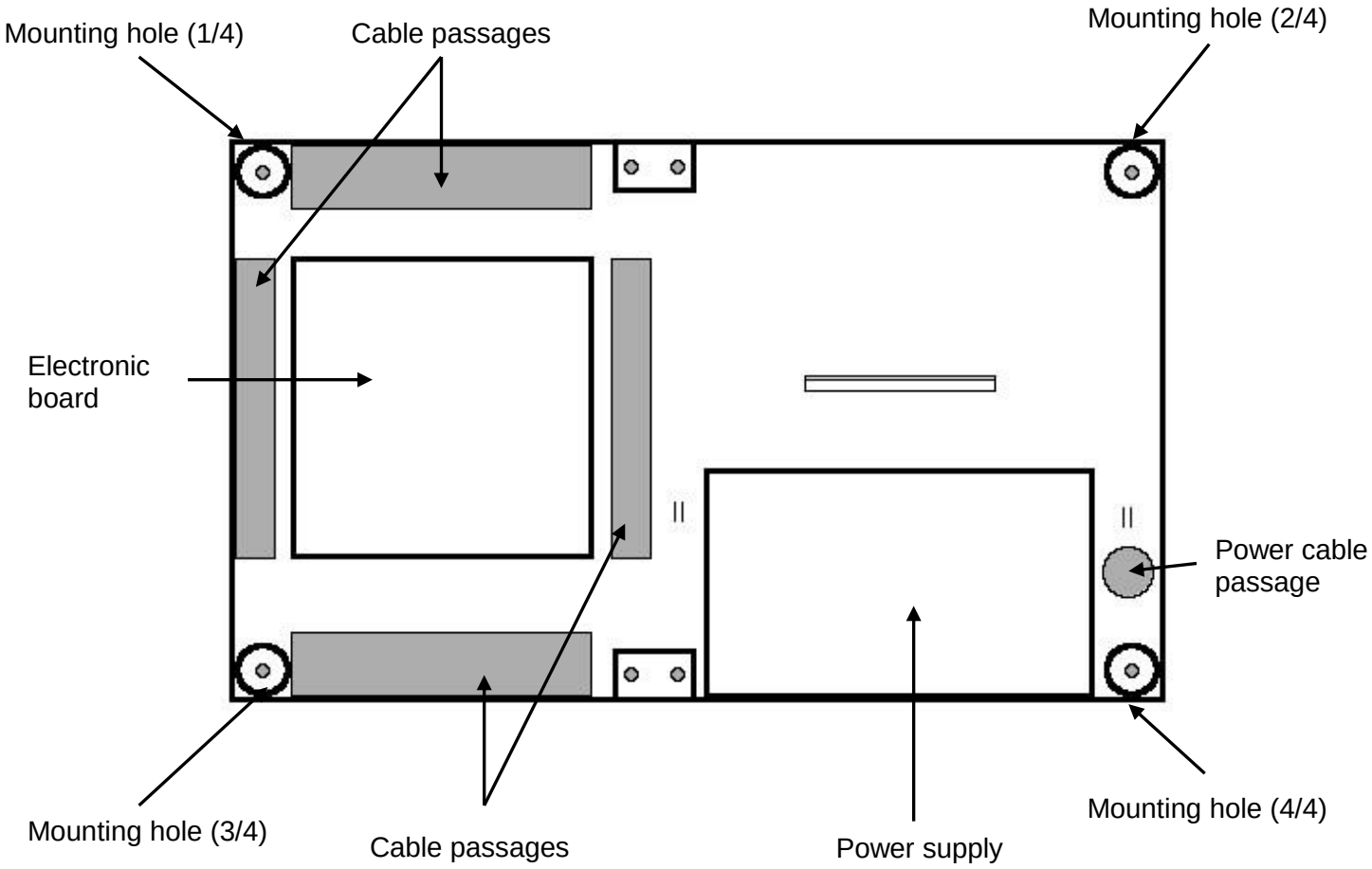
- Blue wire on the terminal marked with a N (Neutral)
- Green/yellow wire on the terminal marked with an E (Earth)
- Brown wire on the terminal marked with an L (phase)

Note: The cable connecting the power supply to the secondary earth must not be removed..

The power supply cable must not be accessible. It must go directly from the wall to the controller case to avoid tearing.

The cabling must comply with local regulations and the installation with CEI **60227** or CEI **60245** standard.

The case must be fixed on a wall.



g. Starting up the power supply

Open the circuit breaker before connecting anything.
Connect the battery wires to the terminal but do not connect the battery terminals.
Make the electrical connections (mains, use and battery)

1. Close the circuit breaker first.
2. Check the output voltage: the LED AC and DC turn green.
3. Connect the battery terminals.
4. Check the battery: the LED BATT turns green.
5. Close the cover.

The supply power is working when the 3 LEDs are green.

h. Battery

The use of a lead acid battery is strongly recommended.

Characteristics of the battery:

Charger voltage (V)	**12**
Charger calibre (A)	6
Maximum battery charge current (A)	4.5
Maximum capacity (Ah) - C20 - 1.75V	86
Minimum capacity (Ah) - C20 – 1.75V	7

Warning:

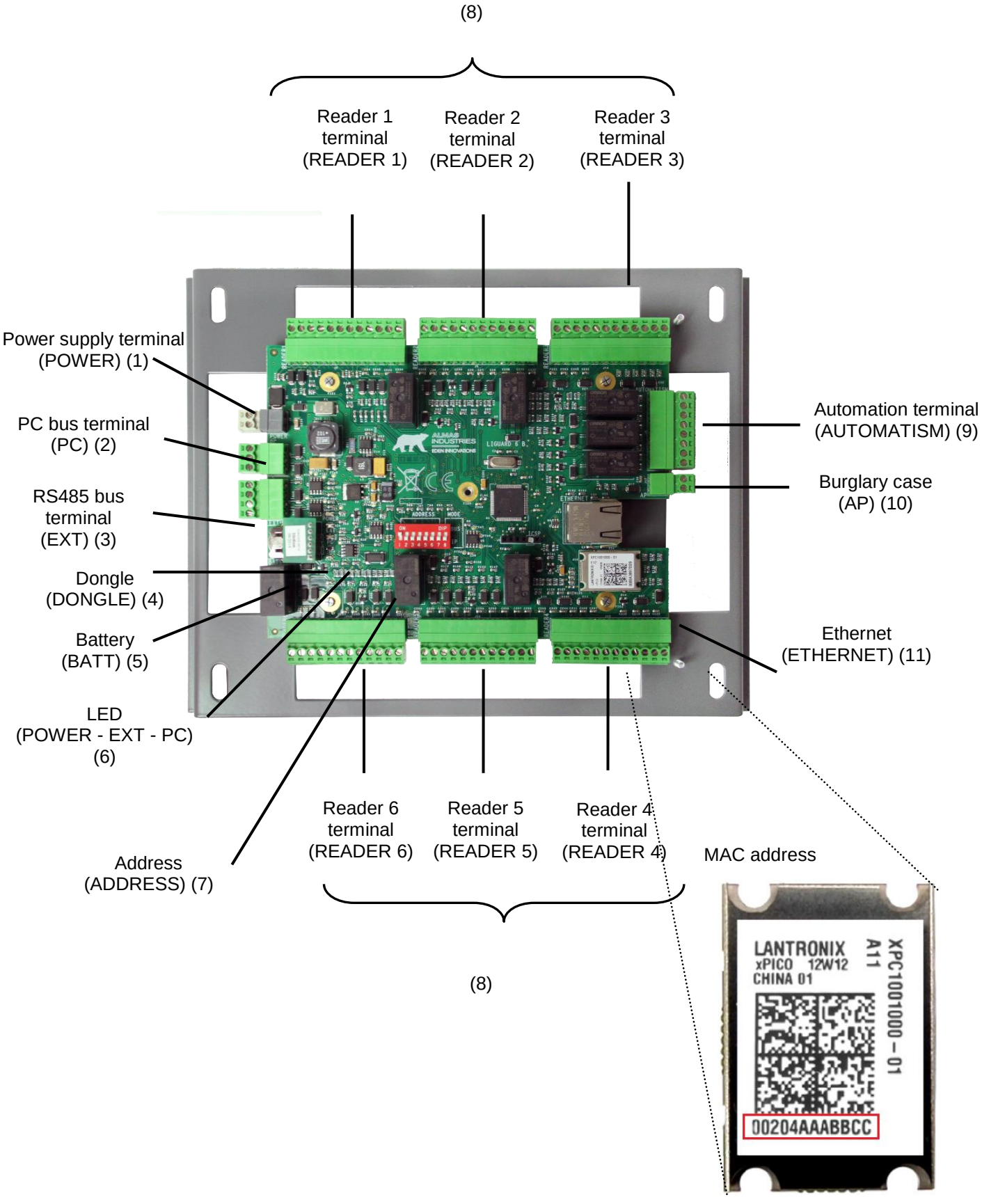
Do not set up a battery that does not fulfil these requirements.

There is a risk of an explosion if the battery is replaced by an incorrect battery. Discard used batteries in accordance to current instructions in the country of use.

Connection:

1. Unscrew the 2 screws securing the battery support.
2. Position the battery so that the terminals face into the case towards the power supply.
3. Connect the black and red battery wires respectively to the BAT- and BAT+ terminals of the power supply connector.
4. Fasten the battery cable lugs to the battery using appropriate adaptors
5. Secure the support and check that the battery will not move.

Controller overview



(1) = Controller power supply terminal.

(2) = RS485 connection to the PC.

(3) = RS485 connection to biometric readers and input/output extension cards.

(4) = Dongle terminal (software licence). See details on page 19.

(5) = Backup battery.

(6) = LED indicators: See details on page 26.

(7) = Switch to set the bus address and the communication mode –bus or IP-. See details on page 18.

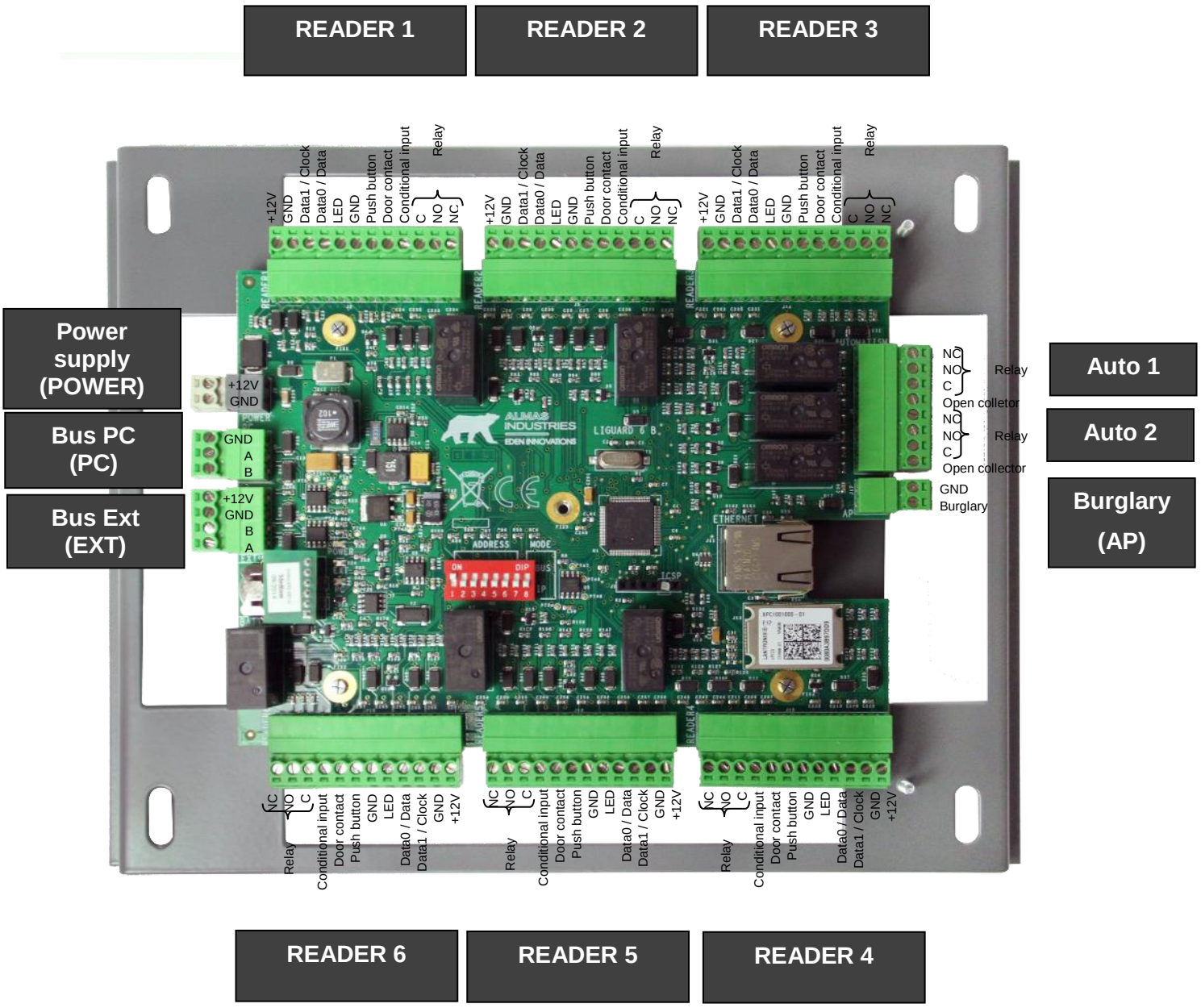
(8) = Terminals to connect 4 Wiegand or Clock&Data readers (RFID, magnetic strip, smart card, other biometric readers, etc…).

(9) = Automation terminal.

(10) = Terminal to connect the burglary case switch.

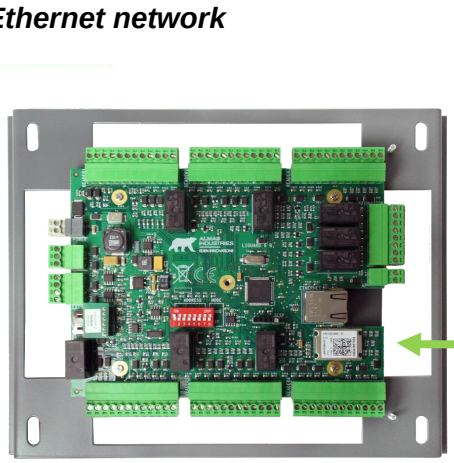
(11) = Ethernet connector to connect RJ45 cable.

Terminal functions



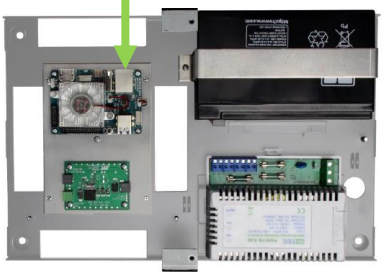
Connecting the controller to the network

1) Ethernet network



LIGUARD 6®

v

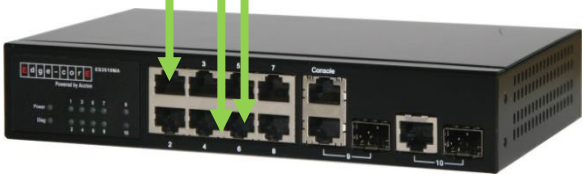


OPTIMABOX®

or

Windows® PC, with SenatorFX.NET.

To know the complete list of compatible Windows® versions please see SenatorFX.NET® manual.



SWITCH OR ROUTER

Use a RJ45 Cat5e FTP shielded cable (or a shielded F/UTP)

The maximum length of the cable between the controller and the switch must not exceed 100 m.

To find the MAC address see page 12.

The controller default IP address is 192.168.3.154.

DIP-SWITCH: **Switch 8 is OFF –down**– for **IP mode.**

Address 1
IP mode

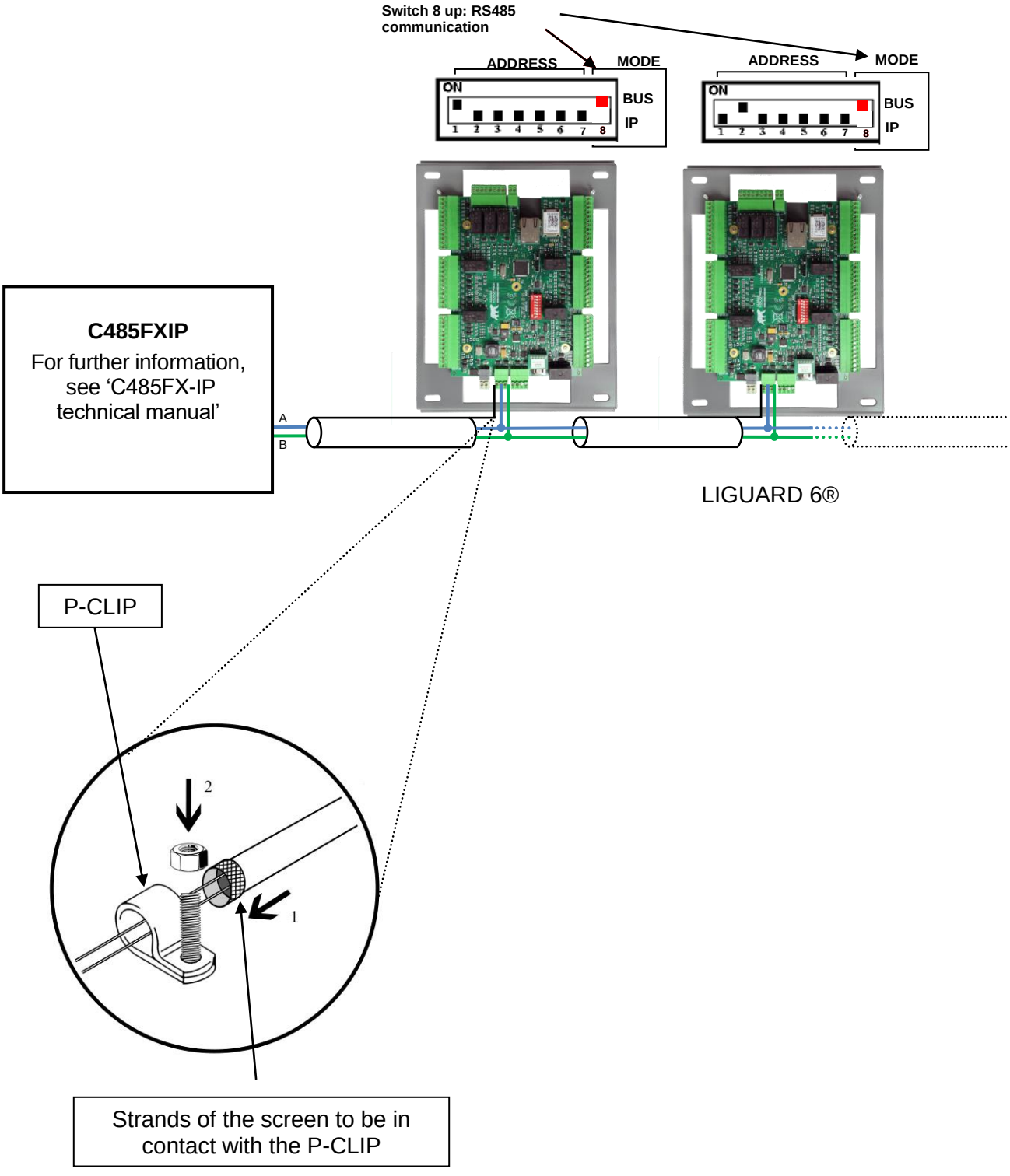
2) RS485 network

a. Cabling

Terminal: PC (3 connectors)

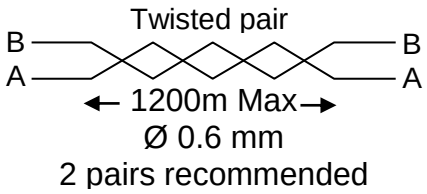
DIP-SWITCHS: Network binary number of the controller.

Switch 8 ON –up– for **RS485 BUS PC**



b. Wiring rules

- The C485FX interface connects to the 3 connectors of the PC bus terminal of the LIGUARD® controller.
- The wiring must be in series. The wiring must not be star or tree to avoid electromagnetic interference.
- The cable used for communication must be twisted, shielded and equipped with 2 pairs. The cable cross section must be 0.6mm (22AWG) with characteristic impedance of 120Ω. We recommend Belden 3107A or AlphaWire 6455 BK005 for installations subject to strong interference. If there is no strong interference, Belden 8723 may be used.
- The bus must be fitted with resistors with a value of 120Ω between A and B, at each end.
- The maximum number of connected products is 32 items.
- The link must not exceed 1200 meters.
- This link is a data bus, it must be far away as possible from other cables.



Make sure to use the same pair for A and B.

Warning: The total length must not exceed the recommended distance.

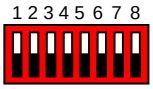
Do not wire the controller to the readers close to other cables carrying high voltage or current cables including 230 or more.

c. <u>Addressing switch and communication mode</u>

This switch enables an identifier to be assigned to the controller on the network and to set the communication mode –IP or bus.

Warning:

- **You cannot set both modes at the same time.**
- **You must set the address and the communication mode BEFORE powering the controller.**

Key: ON 

In this example, all the switches are set to ON.

Communication mode:

- IP: Switch 8 down
- RS-485 bus: Switch 8 up

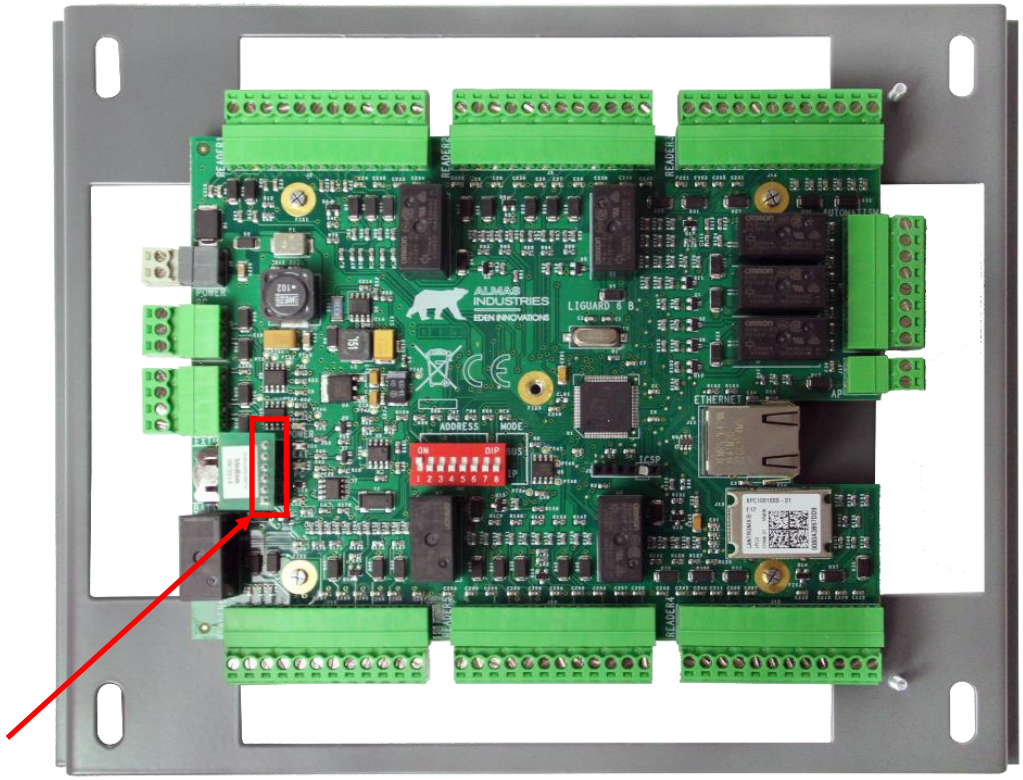
Dongle

1) Licences

DONGLE	Désignation
DONGLEFXCD16	License to connect up to 16 readers on the same installation.
DONGLEFXCD512	License to connect up to 512 readers on the same installation.

2) Dongle installation

To run SenatorFX.NET® software, you need to connect a Dongle to one of the controllers of the installation.

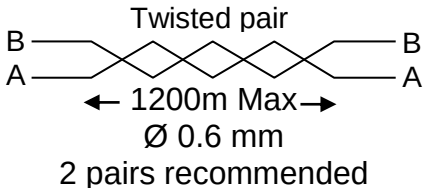


Dongle connector

Cabling biometric readers and RS485 extension cards

1) Wiring rules

- EDEN INNOVATIONS biometric readers and extension cards are to be connected to the EXT terminal of the LIGUARD® controller. This terminal block has a power supply to power the biometric readers and extension cards.
- The wiring must be in series. The wiring must not be star or tree to avoid electromagnetic interference.
- The cable used for communication must be twisted, shielded and equipped with 2 pairs. The cable cross section must be 0.6mm (22AWG) with characteristic impedance of 120Ω. We recommend Belden 3107A or AlphaWire 6455 BK005 for installations subject to strong interference. If there is no strong interference, Belden 8723 may be used.
- The bus must be fitted with resistors with a value of 120Ω between A and B, at each end.
- The link must not exceed 1200 meters.
- This link is a data bus, it must be far away as possible from other cables.

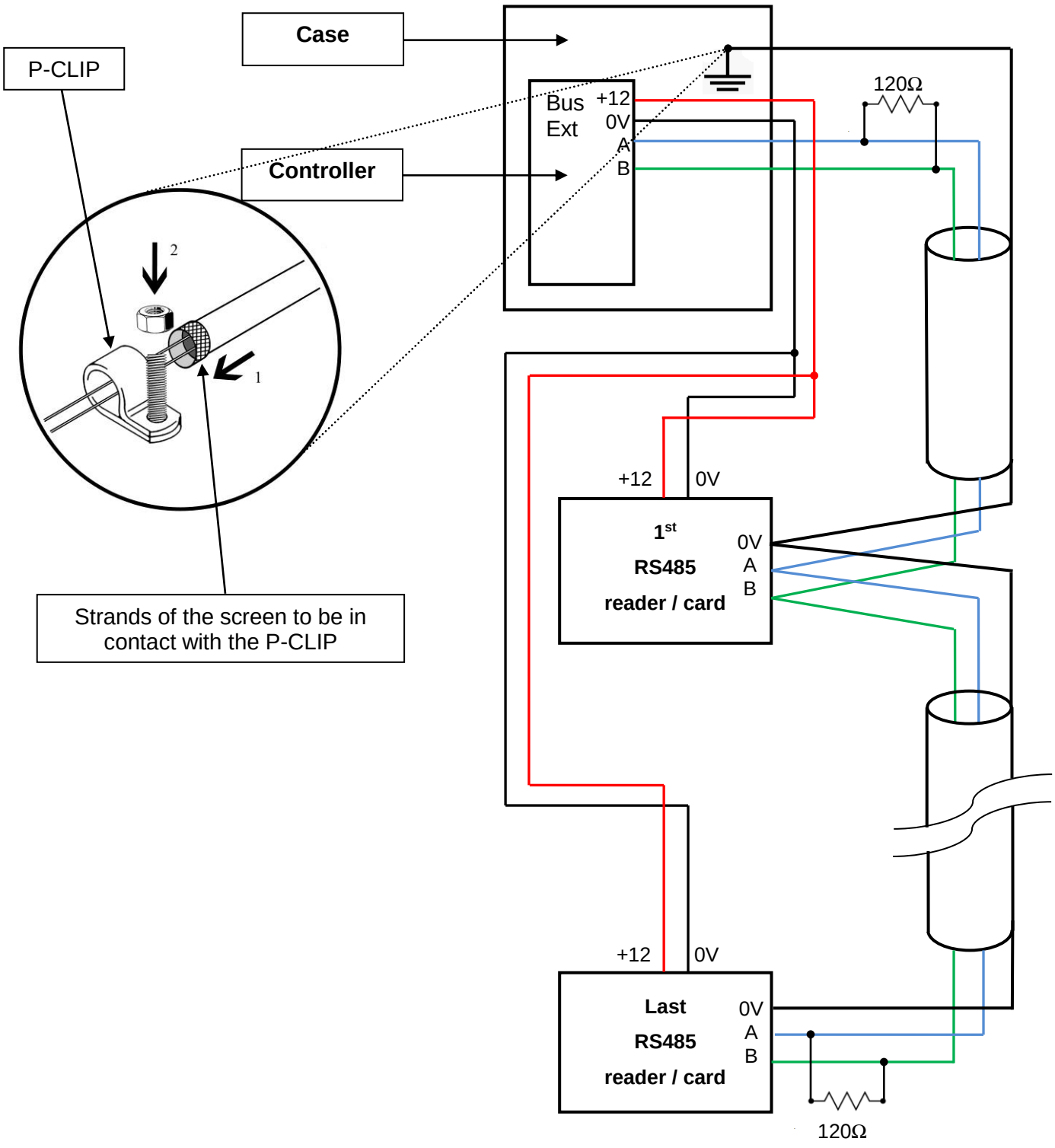


Make sure to use the same pair for A and B.

Warning: The total length must not exceed the recommended distance.

Do not wire the controller to the readers close to other cables carrying high voltage or current cables including 230 or more.

2) Typical wiring



Cabling identification technology using Wiegand / Clock&Data protocol

3) Wiring rules

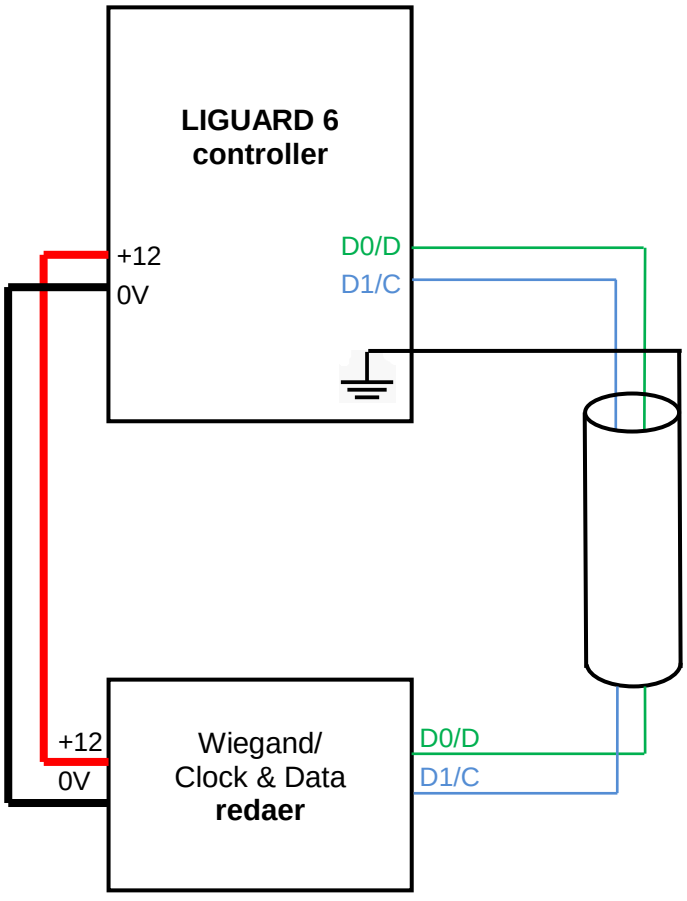
- The cable used for communication must be shielded and equipped with 3 pairs. The cable cross section must be 0.6mm (22AWG).
- Only one reader can be connected per bus.
- The link must not exceed 150 meters.
- This link is a data bus, it must be far away as possible from other cables.

Note: You can connect readers using different technology (example: Reader 1 Wiegand, Reader 2 Clock&Data).

Warning: Do not wire the controller to the readers close to other cables carrying high voltage or current cables including 230 or more.

If you use a third power for the reader, you must have a common earth for the controller and the reader.

4) Typical wiring



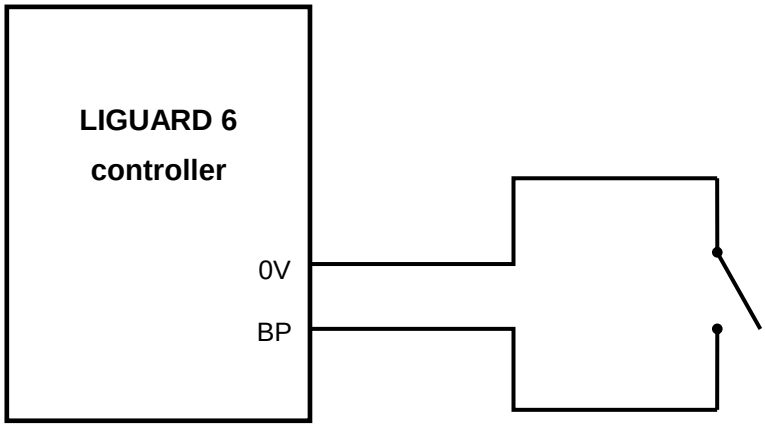
Cabling a dry contact (push-button, door contact…)

1) Wiring rules

All entries on a reader terminal of a LIGUARD 4® controller connect to the earth.

2) Typical wiring

Cabling a push-button

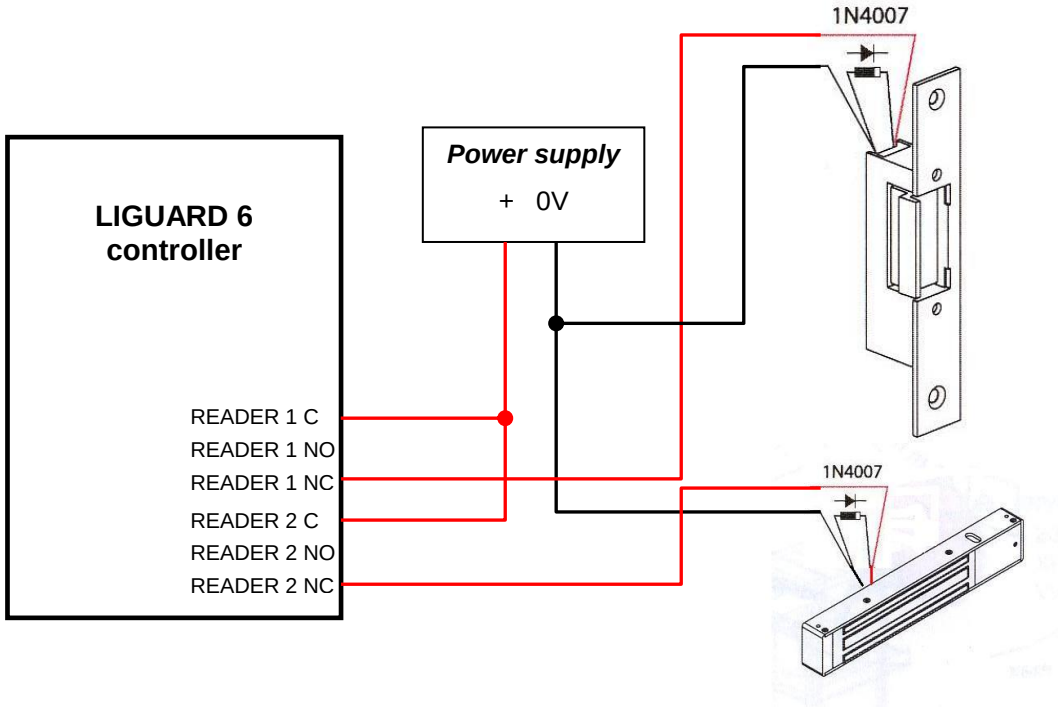


Cabling opening systems

Note: Whatever the connection method and whatever the opening system, it is essential to set up the non-return diodes supplied with the controller.

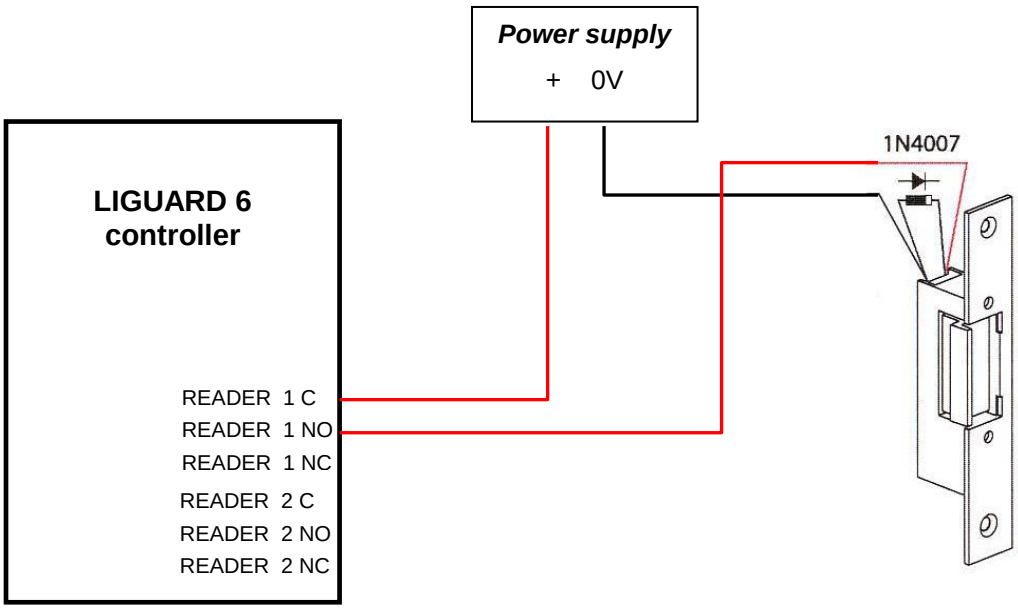
a. *Power failure door activator and electromagnetic door lock triggered by a power failure*

Typical wiring:



b. *Door activator triggered by a voltage pulse*

Typical wiring:



Cabling the burglary case contact

Use a switch or NO / NC type microswitch (configurable via OPTIMABOX / SenatorFX.NET software). An area is dedicated on the base of controller cases with power supply.

LED signage

1) Description

DEL	Description
POWER	Power supply
EXT	Communication with biometric reader and extension cards
PC	Communication with the software

2) States, faults, solutions

DEL	State	Meaning	Solution
POWER	**ON**	**The controller is correctly powered**	-
	OFF	The controller is not powered	Check the power supply
EXT	**Flashing rapidly**	**The connection is established**	-
	Flashing discontinuously	The communication with some RS485 devices does not work properly	Check RS485 devices wiring and power supply
	OFF	No communication	**OK if there is no RS485 devices** Otherwise, check RS485 devices wiring and power supply
PC	**Flashing**	**The connection is established**	**-**
	OFF	No communication with the software	**Check network parameters / installation / software**

Notes

Technical support :

support@eden-innovations.com

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France

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