

PARKLIO™ CHAIN

USER MANUAL



Automatic with remote control on your smartphone

24VDC chain barrier for residential and collective use

Up to 20m width passage barrier

High usage factor

Obstacle detection

Self-learning of open/close distances (encoder)

Electronic soft start-soft stop

Use of external limit switches (encoder)

Housing for battery backup

Downloadable application for your smartphone

A temporary digital key for your visitors



Thank you for the confidence you have shown us by purchasing our product.

Please read this manual first!

Dear Customers,

We hope that all your expectations of this product will be fulfilled. Parklio™ Chain is manufactured using the latest technologies and has undergone rigorous quality control procedures.

The User Guide will help you use your product quickly and safely.

- Read the user manual before installing and using your product.
- Always follow the safety instructions.
- Keep this user manual at hand for future reference.

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1. General safety precautions

This section contains safety instructions that will help protect you from the risk of injury or property damage. All warranties will be voided if these instructions are not followed.

- If you have not read and understood the operating instructions, do not use the chain barrier. If you have any questions, please contact our technical support or sales department for further explanations.
- Ignoring use instructions, as well as inappropriate installation and use of the chain barrier may result in chain barrier damage or user injury. Always have instructions on hand.
- Before using the chain barrier for the first time, ensure that all the parts listed in these instructions are inside the original packaging. Installers should become familiar with the mechanical and electrical requirements for such a system.
- Installers should assume the risk of all injuries that might occur during installation, including, without limitation, the risk of electric shock.
- For the solar model of the chain barrier, it's important to note that a single photovoltaic module can produce DC voltages greater than 30 volts when exposed to direct sunlight. Contact with a DC voltage of 30 V or more is potentially hazardous.
- Keep children well away from the system while transporting and installing mechanical and electrical components.
- Completely cover the module with an opaque material during installation to keep electricity from being generated.
- Do not wear metallic rings, watchbands, ear, nose, lip rings, or other metallic devices while installing or troubleshooting photovoltaic systems.
- Only plugs, batteries, chargers, spare parts, and power supplies supplied by the manufacturer of the chain barrier should be used. The use of non-manufacturer-supplied components will result in the termination of the warranty.
- Use only insulated tools that are approved for working on electrical installations.
- Abide with the safety regulations for all other components used in the system, including wiring and cables, connectors, charging regulators, inverters, storage batteries, rechargeable batteries, etc.
- Use only equipment, connectors, wiring, and support frames suitable for a solar electric system. Always use the same type of module within a particular photovoltaic system.
- Never touch uninsulated cable ends.

- For the solar model of the chain barrier, under normal outdoor conditions, the module will produce currents and voltages that are different than those listed in the data sheet. Data sheet values are values expected at standard test conditions.
- The packaging materials (plastic, polystyrene, etc.) should not be discarded in the environment or left within reach of children, as they are a potential source of danger.
- Keep this guide in a safe place for future reference (care and maintenance) and in case of sale or disposal of the modules.
- Never expose the inner workings to water.
- The device is to be exclusively installed on a hard, level concrete floor. If you have any questions, please contact our technical support or sales department for further explanations.
- The device and external supply must be disconnected from the power supply during installation, maintenance, cleaning, and repairs.
- Leave the chain barrier repairs to a specialist. Improper repairs may lead to an accident or a malfunction in the unit.
- The provided battery, for the solar model of the chain barrier, is fragile; please handle it with care. Do not expose the battery to direct heat.
- The battery provided for the solar model of the chain barrier is intended to be used only with Parklio products; use with other products is not recommended. Parklio is not responsible for any damage caused to the equipment or the battery pack when misused.
- The warranty does not cover consumable parts of the device, color fading and chipping, increased noise as a result of the aging of the device, and other aesthetic effects that do not affect its functionality or safety. Never use chemical solvents on the product, as it may cause an explosion.
- Strictly follow the instructions for proper installation and connection to the electrical network.
- The installer is to provide a device (e.g. magnetothermic switch) ensuring the omnipolar sectioning of the equipment from the power supply. The standards require a separation of the contacts of at least 3 mm in each pole (EN 60335-1).
- Installation requires mechanical and electrical skills; therefore, it shall be carried out by qualified personnel only, who can issue the Compliance Certificate concerning the whole installation.
- The upstream electric system shall comply with the laws and rules in force.
- Do not install the product in explosive environments and atmospheres; the presence of inflammable gases or fumes is a serious safety hazard.



DANGERS:

- Danger of battery explosion from sparking.
- Danger of electric shock.
- Install the product in a heatproof environment. Ensure therefore that there are no chemicals, plastic parts, curtains, or other textiles, etc. near the equipment.
- Ensure that the equipment is used under the correct operating conditions. Never operate it in a wet environment.
- Never use the product at sites where gas or dust explosions could occur.
- Ensure that there is always sufficient free space around the product for ventilation.
- Protect the solar modules from incident light during installation, e.g., cover them.
- This product is designed and tested in accordance with international standards. The equipment should be used for the designated application only.
- Connections must always be made in the sequence described in the Installation chapter of this manual.
- The installer of the product must provide a means for cable strain relief to prevent the transmission of stress to the connections.
- In addition to this manual, refer to the photovoltaic panel manual for detailed instructions and to the battery manual for scheduled maintenance cycles.

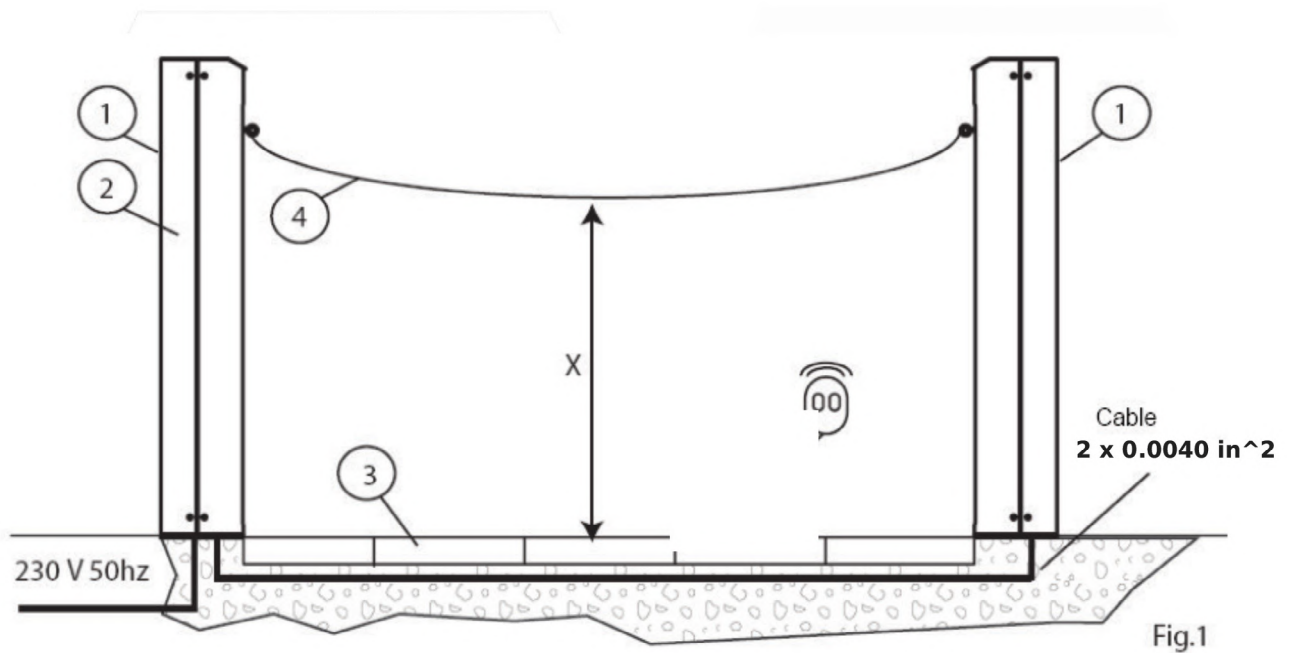
Symbol	Name	Meaning
	Danger of electric shock warning	Do not touch the electric connections, there is danger of electrical shock.
	Hot surface warning	Do not touch the surface of the appliance, while it is running, it will get hot.
	Read the manual instruction	Read the product manual before installation and use.
IP43	Ingress protection value	IP43 - The electronic components are protected from tools and small wires greater than 1 millimetre and protected from water spray less than 60 degrees from vertical.
	Double insulation symbol	The appliance is double insulated and does not require a safety connection to electrical earth (ground).



Handle electronic parts and terminals with extreme care, as these parts are highly sensitive to static electricity

PARKLIO (PARKLIO D.O.O.) HAS THE RIGHT TO MODIFY THE DEVICE WITHOUT PREVIOUS NOTICE. PARKLIO (PARKLIO D.O.O.) DECLINES ANY RESPONSIBILITY FOR DAMAGE OR INJURY TO PEOPLE OR THINGS CAUSED BY IMPROPER USE OR WRONG INSTALLATION. THE APPLIANCE HAS BEEN ESTABLISHED ACCORDING TO ALL VALUENT SAFETY CRITERIA AND STANDARDS. HOWEVER, WE RECOMMEND THAT WITHOUT THE NEEDED HELP AND SUPERVISION, CHILDREN, A PERSON OF DISABLED PHYSICAL, MOTOR, OR PERSONAL EQUALITY, AND RELATED PEOPLE WITHOUT PREVIOUS EXPERIENCE OR KNOWLEDGE DO NOT USE THE BARRIER. EXCEPTION IS THE DEVICE USAGE UNDER ADEQUATE SUPERVISION IF THEY HAVE RECEIVED SAFETY INSTRUCTIONS AND TRAINING OR IF THEY ARE INFORMED ABOUT THE DANGER CAUSED BY IMPROPER USAGE. THE SAME RECOMMENDATION IS FOR JUVENILES AND THEIR USAGE OF THE DEVICE. DO NOT ALLOW CHILDREN TO PLAY WITH THE DEVICE. DO NOT LET CHILDREN CLEAN THE DEVICE, USE IT, NOR MAINTAIN IT, WITHOUT ADEQUATE SUPERVISION.

2. Layout



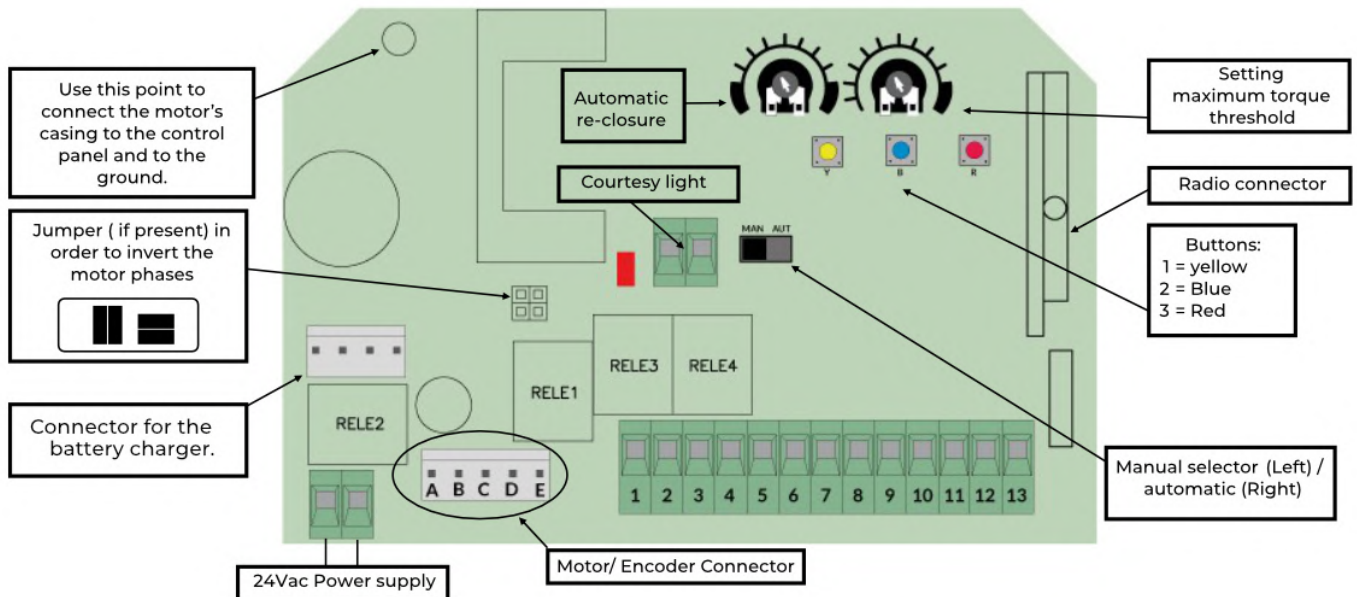
- 1. Parking post
- 2. Control unit
- 3. Profile for the chain
- 4. Chain

Length of the chain (m)	4, 6, 8, 10, 12, 14, 16, 18, 20
Relative height in the middle (in)	75, 70, 65, 55, 50, 45, 40, 35

Attention: The value in the table has been determined using a chain of 400 grams/meter

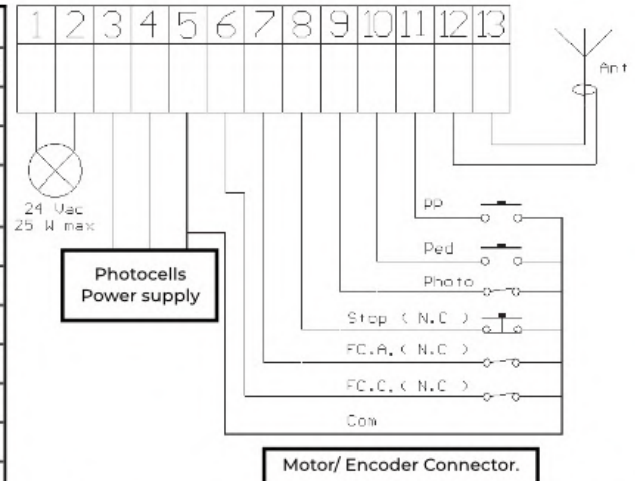
3. Configuration

Action is a control unit dedicated to the movement of the chain barrier with **24Vdc motor**. The coexistence of various types of safeties such as the control of the absorbed power by the motor and the velocity of the motor allows a rapid intervention of the anti – squeezing security (sense). Through the encoder present in the motor it is possible to control the exact position of the chain and to use it without mechanical limit switches. The control unit has inputs for mechanical limit switches, for the step by step button, for the pedestrian opening, for the safety photocells and the output for flashing light 24 Vac. The unit also allows the regulation by trimmer both the automatic re-closure and the motor force. Action can control motors at 24 – 30 Vcc with a maximum consumption of 7A.

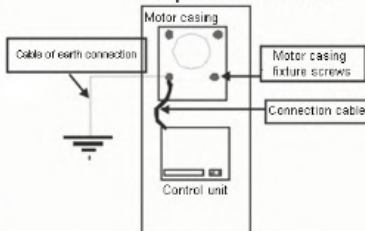


4. Electrical connections

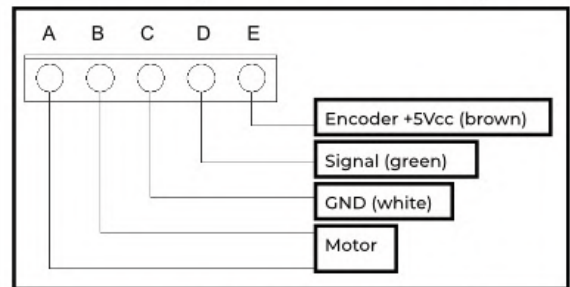
Terminal	Function	Setting
1 - 2	Flashing signal output	OUT: 24 Vac 25 W MAX
3	Positive power supply TX & RX photocell	OUT: +24Vcc
4	Negative power supply TX photocell	OUT: GND TX
5	Negative power supply RX photocell and common button and safety	OUT: GND RX Common
6	Stop closure button input	Normally closed (NC)
7	Stop open button input	Normally closed (NC)
8	STOP button input	Normally closed (NC)
9	RX photocell contact input	Normally closed (NC)
10	Pedestrian button input	Normally open (NO)
11	Relay button input	Normally open (NO)
12	Antenna screen input	GND
13	Antenna input	Antenna



Example of connection



Any contact which is Normally Closed (N.C.) Must be bridged to the common if not used.



Note: Cable colors valid only for Tecno-cat motor.

IMPORTANT: to obtain a correct working of the accessories (photo devices in particular) connected to the control box, it is very important that the entire system (motor+ control box) has a single mass reference system. You must therefore connect a small cable between the motor casing and the control box at the point shown in the figure. If there is a good ground connection it is advisable to connect it to the system.

5. Enabling and disabling the pre-flashing, photocell test and the multi-user function

To modify the status of any of these functions it is necessary to enable the setting mode. In the phase of learning the control unit automatically goes through all possible functions in which it is possible to intervene. The led of the flashing light signals the selected function each time with a variable number of flashings. The passage from a function to another one is executed automatically (it is enough to maintain always pressed the red button). The control unit starts selecting the first function (signaled by 1 flashing), successively, keeping pressed the red button you pass at the second function (signaled by 2 flashings) and so on. To enable the setting / learning mode proceed as follows:

1. Raise the chain to its upper position (completely closed).
2. Press and keep pressed the red button
3. After 4 - 5 seconds the led of the flashing - light executes a series of 8 flashings (notifying the next entry to the learning mode). Once the series of flashings end the control unit is in the learning mode. Do not release the red button yet.
4. Once individualized (through the number of flashings of the flashing-light led) the function that you want to modify, release the red button. This way the function is selected. Once selected the function, the control unit puts in evidence the setting by flashing with a slow frequency (1 flashing /second) or with a rapid frequency (2 flashings / second) as pointed out on the next table:

No. of flashes	Selected function	Flash	Yellow button	Blue button
1	Pre-flashing	Slow= disabled	activation	deactivation
2	Photocell Test	Fast= disabled	activation	deactivation
3	Multi-user setting	Slow= disabled	activation	deactivation
4	Reserved			
5	Reserved			
6	Reserved			

5. Press now the button (see table) correspondent to the new status you wish set for the selected function. The frequency of flashing will vary according to the chosen mode. At this point it is possible to modify further functions or, if you have finished, go out from the setting phase. In case you want to modify other functions, press and keep pressed the red button. After few seconds, the control unit will start again to select in sequence the several functions. Instead if you want to exit from the learning mode, it is sufficient to bring the lever of the selector Sw1 in manual position, wait 1-2 sec and successively report it in automatic position. In this way, the control unit gets out of the learning mode and prepares itself for the normal functioning

6.1 Pre-flashing: The chain movement is always signaled by a pre-blinking, advising the user that the chain is next to move.

6.2 Multi-user function: During the opening phase of the chain, every other command is ignored. Once opened the chain

(completely down, it is possible to close it using the step-by-step command or using the automatic re-closure. During the closing phase, a step-by-step command blocks and inverts the movement.

6.3 Photocell test: Every time the motor is switched on, the control unit automatically controls if the photocells are functioning properly. This operation increases the security system. If a photocell is damaged (for instance output relay stuck) or in case of undesired photocell input short circuit. This test is executed immediately after that the control unit has received an order of "moving", but before power is applied to the motor.

6. Problems and their solutions

Type of problem	Probable cause	Solution
On activating the opening command the automation does not move.	Lack of electrical power supply	Check the presence of the electrical voltage and all the connections to the electrical network.
	Burned fuse	Replace the fuse with a similar one.
On activating the opening command the chain moves for a brief time and then stops.	Incorrect encoder connection	Check the connections of the encoder's wires.
On activating the opening command, the automation moves to closure.	Jumper direction motor inverted	Invert the Jumpers.
You cannot manage to enter into the remote control learning phase	The chain is not completely closed (UP)	Close the chain (in the manual). If the chain was closed set selector S1 to manual, wait 1 second and reset it to automatic. Try again entering into setting mode.
You cannot manage to memorize the remote controls	The type of set decoding in the control panel does not correspond to the type of remote control in use.	Check which decoding has been set and possibly select that which corresponds to the remote control in use.
You cannot manage to enter into the opening/ closure programming mode. (run-time)	The chain is not completely closed (UP)	Close the chain (in the manual). If the chain was closed set selector S1 to manual, wait 1 second and reset it to automatic. Try again entering into setting mode.
The control panel is powered but the gate does not move.	A normally closed input is not active	Check the photocell, stop and limit switch input. If not used they must be bridged to the common.

7. Description and dimension of the column

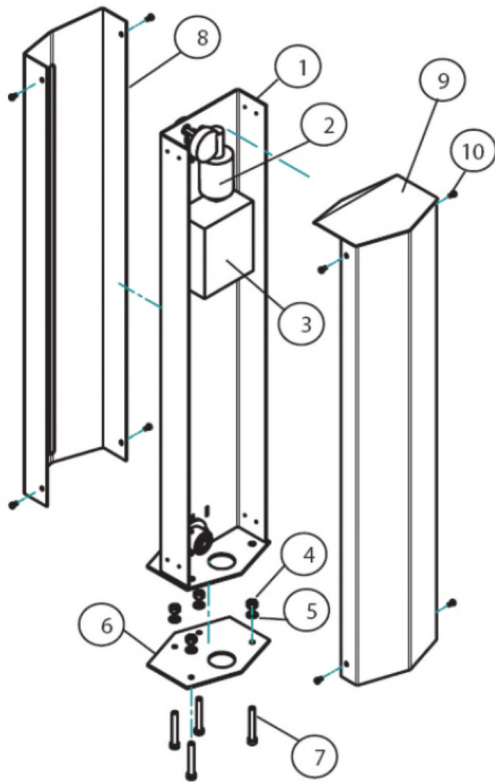


Fig.4

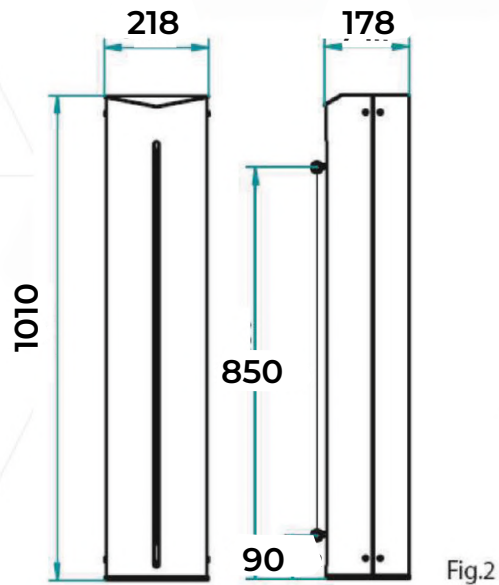
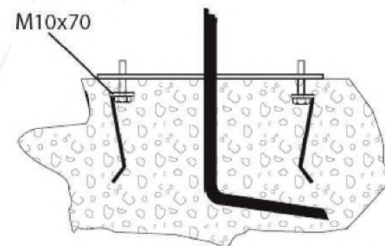
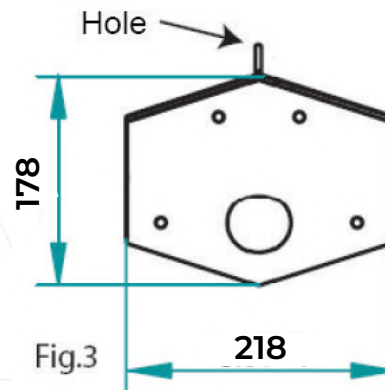


Fig.2

1. Column
2. Gear motor with encoder
3. Control unit
4. Auto blocking nut M10
5. Washer 20x10
6. Backing plate
7. Screw M10x70
8. Anterior cover
9. Posterior cover
10. Closing screw M5x10



8. Installation

■ 8.1. Installation of the standard Chain barrier model

All measures are expressed in millimeters unless otherwise indicated.

■ 8.1.1. Preliminary Control

1. Control the stability and solidity of the zone where the columns are going to be fixed.
2. Use an omni-polar interrupter with contact distance of at least 3mm.
3. The connection to the power supply must be separated than the connections to the security and commanding devices

■ 8.1.2. Installation of the Column (Fig.1, Fig.2, Fig.4)

1. Screw in for 1,5 - 2,0 cm the 4 screws M10x70 in dotation to the base.
2. Place the base on the previously prepared base of cement (Fig.3)
3. The upper part of the base should be clean and perfectly horizontal.
4. Pass the plastic tubes of the cables through the central opening on the base and check again the stability of the base.
5. Unscrew the 8 screws [10] take off the frontal [8] and the rear cover [9] of the column (Fig. 4)
6. Place now the column structure on the base.
7. Fix now the column to the base with the 4 washers [5] and 4 nuts [4].
8. Fix the frontal covers [8] of both columns with 4 screws [10].
9. Now you can fix the chain to the apposite holes on both columns respecting the level X in the middle of the chain barrier indicated at the table on page 1 (Fig. 5)



Please note that installation cables are not included with the product as the appropriate cable length varies depending on the specific requirements of your installation site. To ensure a seamless installation, we advise consulting with your installer or a qualified professional who can accurately assess and calculate the appropriate cable length required for the Chain installation at your specific location.

■ 8.2. Installation of the Solar chain barrier model

This section of the user manual offers detailed instructions for the installation of your Solar chain barrier model. Installing the Parklio Solar Kit and solar photovoltaic systems requires a certain level of skill and expertise. Installation should be performed only by individuals who are trained and qualified to handle the installation process.

■ 8.2.1. Packaging Contents

Please check that the package contains all the necessary parts.

The Parklio Solar Kit includes:

- › 2 x Photovoltaic panels
- › 1 x Junction box:

The Junction box comes prewired and includes:

- › A battery charger module
- › 2 x 12V 12Ah or 22Ah batteries (depending on customer order)
- › Wiring, Circuit breakers, fuses and connection terminals

Each photovoltaic module comes with a permanently attached junction.



We do not provide cables for connecting the photovoltaic panels to the junction box or for connecting the junction box to the Parklio Chain. We do not provide poles for mounting the photovoltaic panel.

■ 8.2.2. Technical specification

JUNCTION BOX PARAMETERS	VALUE
BATTERIES (supplied preinstalled)	2 x 12 V, 12 Ah or 22 A, AGM Deep Cycle Batteries
OUTPUT LOAD FUSE	20 A
OPERATING TEMPERATURE	-20°C +55°C
HUMIDITY	95%, Non-Condensing
CHARGING PEAK EFFICIENCY	98%
SELF-CONSUMPTION	20 mA
DEGREE OF PROTECTION	IP65
DIMENSIONS	400 mm x 300 mm x 200 mm
WEIGHT	8 kg

PHOTOVOLTAIC PANEL	VALUE
TECHNOLOGY	MONO - Si
P _{MAX}	55W
OPEN CIRCUIT VOLTAGE	22.99 V
SHORT CIRCUIT CURRENT	3.22 A
NOMINAL OPERATING CELL TEMPERATURE	55 °C
OPERATING TEMPERATURE	-40 °C to 85 °C
DEGREE OF PROTECTION	IP65
DIMENSIONS	545 x 668 x 25
WEIGHT	4.0 kg

■ 8.2.3. Photovoltaic module mounting

Solar photovoltaic modules are engineered to transform light energy into direct-current electrical energy, specifically for outdoor applications. These modules can be installed on the ground, rooftops, vehicles, or boats.

Mounting Guidelines

Design Responsibility: The design of the support structures is the responsibility of the system designers and installers.

Mounting Holes Utilization: It is recommended to use the pre-drilled mounting holes in the module frame, as detailed in the subsequent paragraph.

Handling Precautions:

- Do not attempt to disassemble the modules, and do not remove any attached nameplates or components from the modules.
- Use only the pre-drilled holes in the frame for mounting, typically at the four symmetric points near the inner side.
- In high wind or heavy snow conditions, secure the module using all eight mounting holes.
- Do not lift the module by grasping the module's junction box or electrical leads.
- Do not stand, step on, or drop the module. Also, prevent any objects from falling on the module.
- To avoid glass breakage, do not place any heavy objects on the module.
- Do not set the module down hard on any surface to avoid breakage.
- Transport and install the module with caution to avoid damage.

Caution: Improper handling, transport, or installation can result in damage to the module, such as breakage. Ensure all procedures are followed carefully to avoid damage.

Selecting the location

Select a suitable location for installing the modules.

The modules should be facing south in northern latitudes and north in southern latitudes.

For detailed information on the best elevation tilt angle for the installation, refer to standard solar photovoltaic installation guides or a reputable solar installer or systems integrator.

The module should not be shaded at any time of the day.



Do not use the module near equipment or in locations where flammable gases can be generated or collected.

Selecting the proper support frame

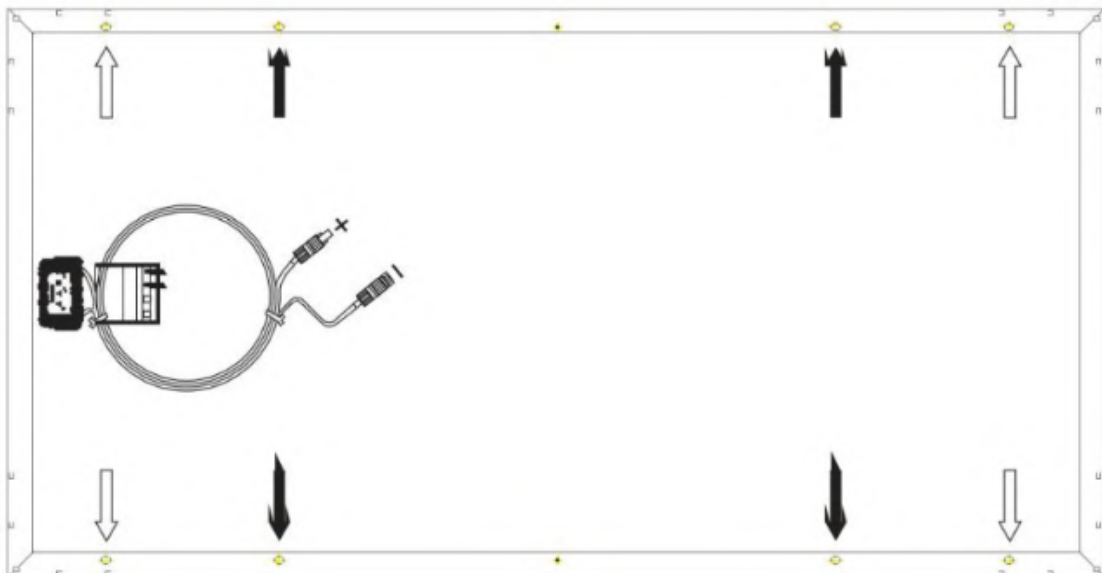
Always observe the instructions and safety precautions included with the support frames to be used with the modules.

Do not attempt to drill holes in the glass surface of the modules, as this action will void the warranty.

Do not drill additional mounting holes in the frame of the module, as this action will also void the warranty.

For standard installations, modules should be firmly fixed to the mount using four designated points. In scenarios expecting higher wind or snow loads, additional mounting points should be utilized, as detailed in the accompanying diagram.

Load calculations are left to the system designers or installers.



Mounting holes for normal installation



For high wind and snow-loads, these mounting holes must be used

Ground mount

Select the height of the mounting system to prevent the lowest edge of the module from being covered by snow for a long time in winter in areas that experience heavy snowfalls.

In addition, ensure that the lowest portion of the module is placed high enough so that it is not shaded by plants or trees or damaged by sand and stone driven by wind.

Roof mount

When installing a module on a roof or building, ensure that it is securely fastened and cannot fall as a result of wind or snow loads.

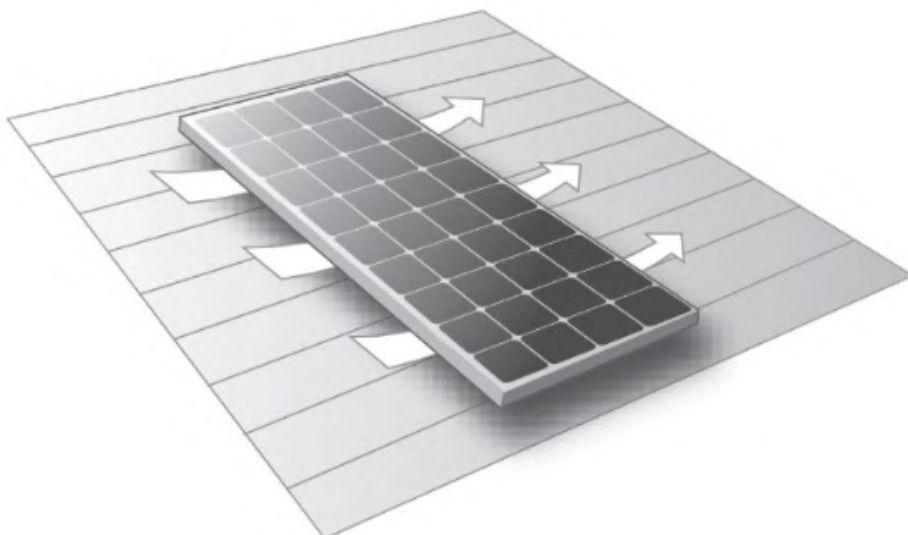
Provide adequate ventilation under a module for cooling (10 cm of minimum air space between the module and the mounting surface).

When installing the module on a roof, ensure that the roof construction is suitable. In addition, any roof penetration required to mount the module must be properly sealed to prevent leaks.

In some cases, a special support frame may be necessary.

The roof installation of solar modules may affect the fire-proofing of the house construction.

The modules are rated fire Class C and are suitable for mounting over a class A roof. To avoid accidents, do not install modules on a roof or building during strong winds.



Pole mount

When installing a module on a pole, choose a pole and module mounting structure that will withstand anticipated winds for the area.



Ground mount

Roof mount

Pole mount

Grounding Instructions

The module frame must be properly grounded. The grounding wire must be properly fastened to the module frame to ensure good electrical contact. Use the recommended type, or an equivalent, connector for this wire.

If the support frame is made of metal, the surface of the frame must be electroplated and have excellent conductivity.

We recommend the lay-in lug when grounding (Cat. No. GBL4-DBT is recommended by the producer).

Assemble the recommended grounding lug to the aluminum frame using a stainless steel M3 or M5 screw and hardware as shown below.

Note: There are two different-sized grounding holes, the smaller of which is being phased out.

Further, the buildups of hardware for mounting the grounding lug are the same—except for the M3 screw, where an added lat washer is mounted directly under the M3 screw head. The star washer is fitted directly under the grounding lug and makes electrical contact by penetrating the anodized coating of the aluminum frame. The screw assembly is further fitted with a flat washer, then a split lock washer, and finally a nut to secure the entire assembly, as shown.

The recommended torque of M3 or M5 screw assemblies is 0.8 NM or 1.5 N

■ 8.2.4. Junction box mounting

Mount the Junction box vertically on a non-flammable substrate, with the electrical terminals facing downward.

The Dimensions drawings chapter of this manual contains a dimension drawing of the solar panels and Junction box. This drawing also indicates the mounting holes.

Observe a minimum clearance of 10cm under and above the Junction Box charger for optimal cooling.

■ 8.2.5. Electrical connections

Use flexible, multi-stranded copper cables for the battery and PV connections.

It is recommended to use a 6 mm² / AWG10 cable for connecting the PV panels in series and to the Junction box.

For connecting the Llad output to the Parklio chain barrier, it is recommended to use at least 2.5m m² / AWG14 wire.

The wire diameter may vary depending on the installation distance of the PV panels to the Junction box and the Junction box to the Parklio chain.

The diameter of the individual strand of the cable used should not exceed 0.4 mm (0.016 inch) or have a surface area exceeding 0.125 mm² (AWG26).

A 25mm² cable, for example, should have at least 196 strands (class 5 or higher stranding according to VDE 0295, IEC 60228, and BS6360). An AWG2 gauge cable should have at least 259/26 stranding (259 strands of AWG26). Example of suitable cable: class 5 “Tri-rated” cable (it has three approvals: American (UL), Canadian (CSA), and British (BS)).

In the case of thicker strands, the contact area will be too small, and the resulting high contact resistance will cause severe overheating, eventually resulting in fire. See the below image for examples of what cable to use and not to use.



Solar kit connections



Check the polarity before connecting the battery and PV voltage. Follow the correct installation procedure described in this chapter. Torque the battery, load, and PV connections at 0.75 Nm.

The Parklio Solar kit comes with pre-wired batteries and charging circuitry. The installer must connect the PV panels to the Junction box, The load output to the Parklio bollard, and ground the Junction Box and PV.

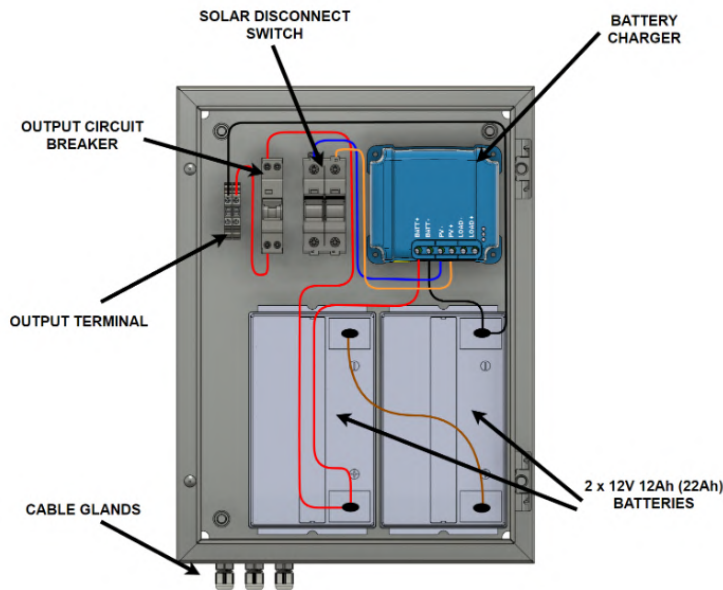


Figure: Junction Box Components

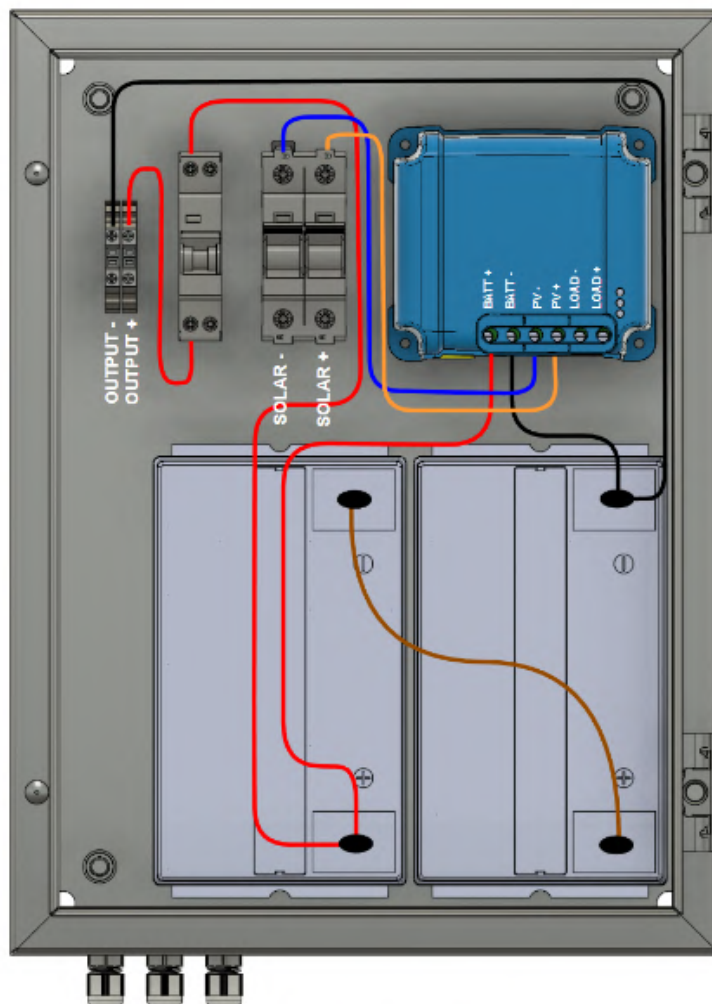


Figure: Junction Box Terminal Locations

Before connecting the Junction box make sure the Solar disconnect switch, the Battery switch, and the Output circuit breaker are in the disconnected position.

First, connect the two provided photovoltaic panels in series: the negative terminal from the first panel should be connected to the positive terminal of the second panel.

Then connect the Photovoltaic panel negative lead to the SOLAR - input of the Junction box and the panel positive lead to the SOLAR + input of the junction box.

Connect the Load of the Junction box to the Parklio chain barrier.

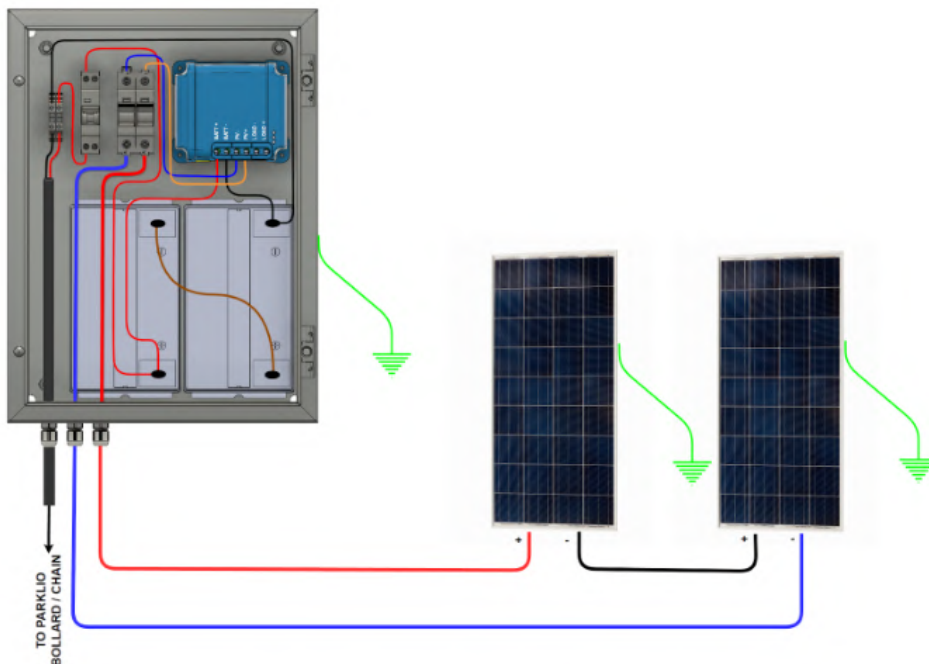
After all connections are made, inspect the connections, then turn on the Battery disconnect switch.

Wait for 10 seconds to allow the charger to power up.

After that, turn on the LOAD output circuit breaker.

Lastly, turn on the SOLAR Disconnect circuit breaker.

The correct connection order is necessary to allow the automatic system voltage detection to set up properly. Not following the correct procedures can disable or damage the charger and/or the installation.



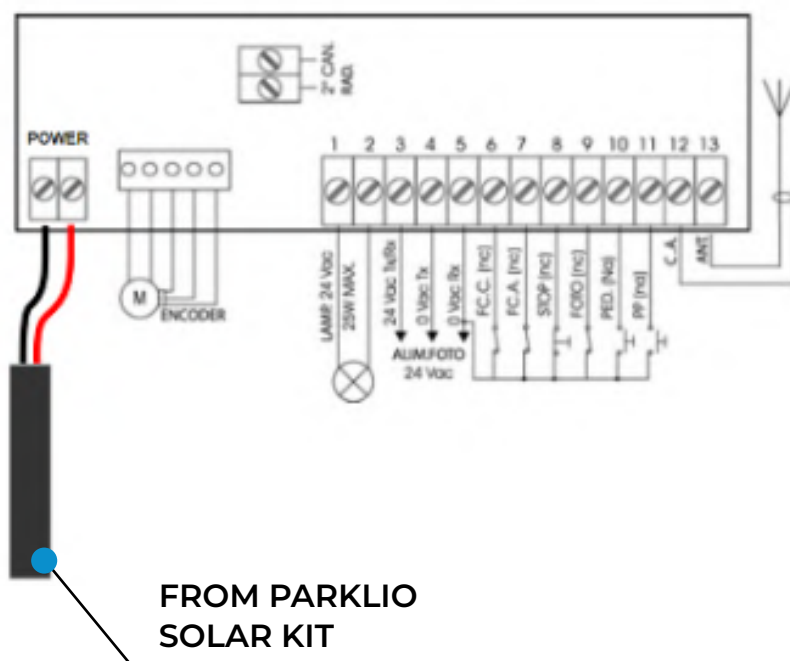
Junction Box Connection Diagram

Parklio Chain Connection

The Parklio Chain comes with a mains power transformer.

When using the Solar kit, disconnect the power transformer from the POWER terminals on the control board.

The Solar kit replaces the power transformer. Connect the Solar Kit LOAD output from the Junction Box to the Parklio Chain POWER input on the control board.



Parklio Chain Connection to the Solar Kit

Grounding Instructions

Grounding each component correctly is crucial for the system's safety and functionality. Follow these specific instructions for each component:

Junction Box Chassis grounding

Ground the frame of the Junction box.

PV array grounding

The positive and negative of the PV array should not be grounded.

Ground the frame of the PV panels to reduce the impact of lightning.

Do not connect the solar charger to a grounded PV array. Only one ground connection is allowed, and this should be near the battery.

Ground fault detection

The solar charger does not have internal ground fault protection.

The USA National Electrical Code (NEC) requires the use of an external ground fault protection device (GFPD).

The system electrical negative should be bonded through a GFPD to earth ground at one (and only one) location.

When a ground fault is indicated, battery terminals and connected circuits may be un-grounded and hazardous.

■ 8.2.6. Autonomy and battery life

When the solar charger is not able to recharge the battery to its full capacity within one day, the result is often that the battery will continually cycle between a 'partially charged' state and the 'end of discharge' state.

This mode of operation (no regular full recharge) will destroy a lead-acid battery within weeks or months.

The charger algorithm will monitor the state of charge of the battery and, if needed, day by day slightly increase the load disconnect level (i.e., disconnect the load earlier) until the harvested solar energy is sufficient to recharge the battery to nearly the full 100%. From that point onward, the load disconnect level will be modulated so that a nearly 100% recharge is achieved about once every week.

9. Controlling the chain

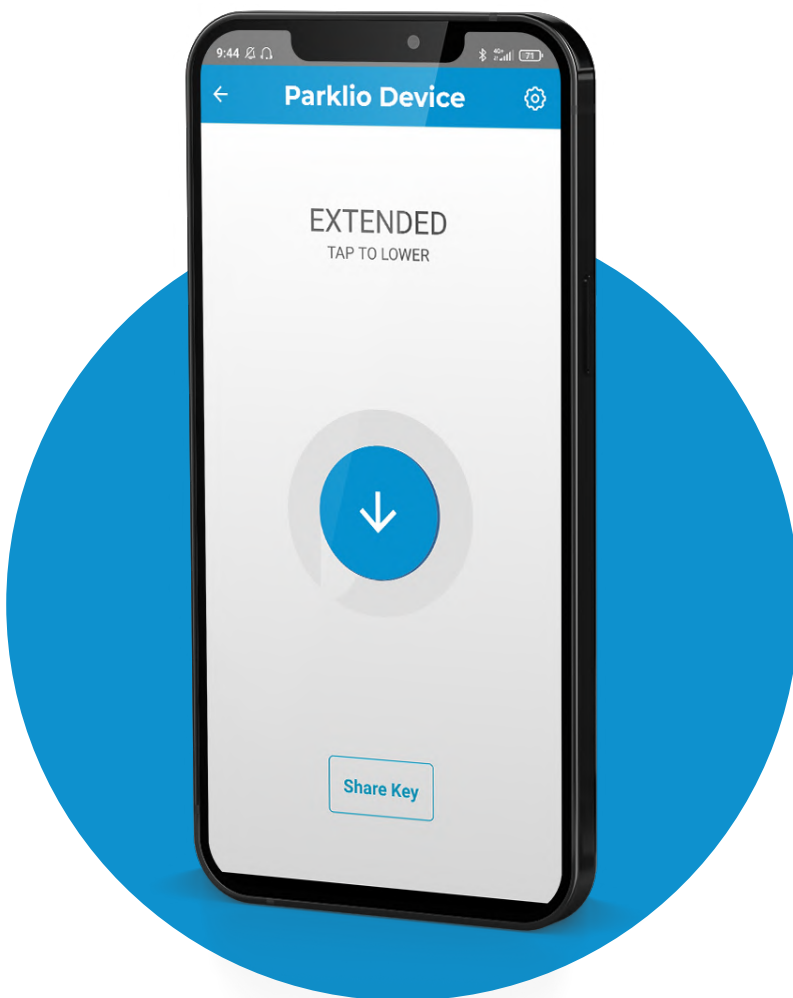
This section will provide detailed instructions on how to connect the mobile application with the chain and how to control the chain using the free Parklio Connect mobile application.



Please note that internet connectivity is required for the chain's first connection and setup.

■ 9.1. Installing the application

The application can be downloaded by scanning the following QR codes:



Android



iOS



Huawei



Or on the following links:

Android - <http://bit.ly/2iMkln5>

iOS - <https://apple.co/2iaV7aA>

Huawei - <https://urldre.cloud.huawei.com/mCe8Pn0uD6>

■ 9.2. Register and login

To use Parklio Connect the user needs to be logged in. An user may login with an existing Google account, an Apple account, or the user may create and use a Parklio account with their email.

EMAIL
Enter Email

PASSWORD
Enter Password

Login

Sign up Forgot password?

OR

Sign in with Google

By clicking Login or Signup indicates you agree with our Terms and Privacy Policy

Parklio™ © 2021

Create an Account

EMAIL

PASSWORD

CONFIRM PASSWORD

Sign up

By clicking Login or Signup indicates you agree with our Terms and Privacy Policy

Parklio™ © 2021

To login via Google simply press the *Sign in with Google* button.

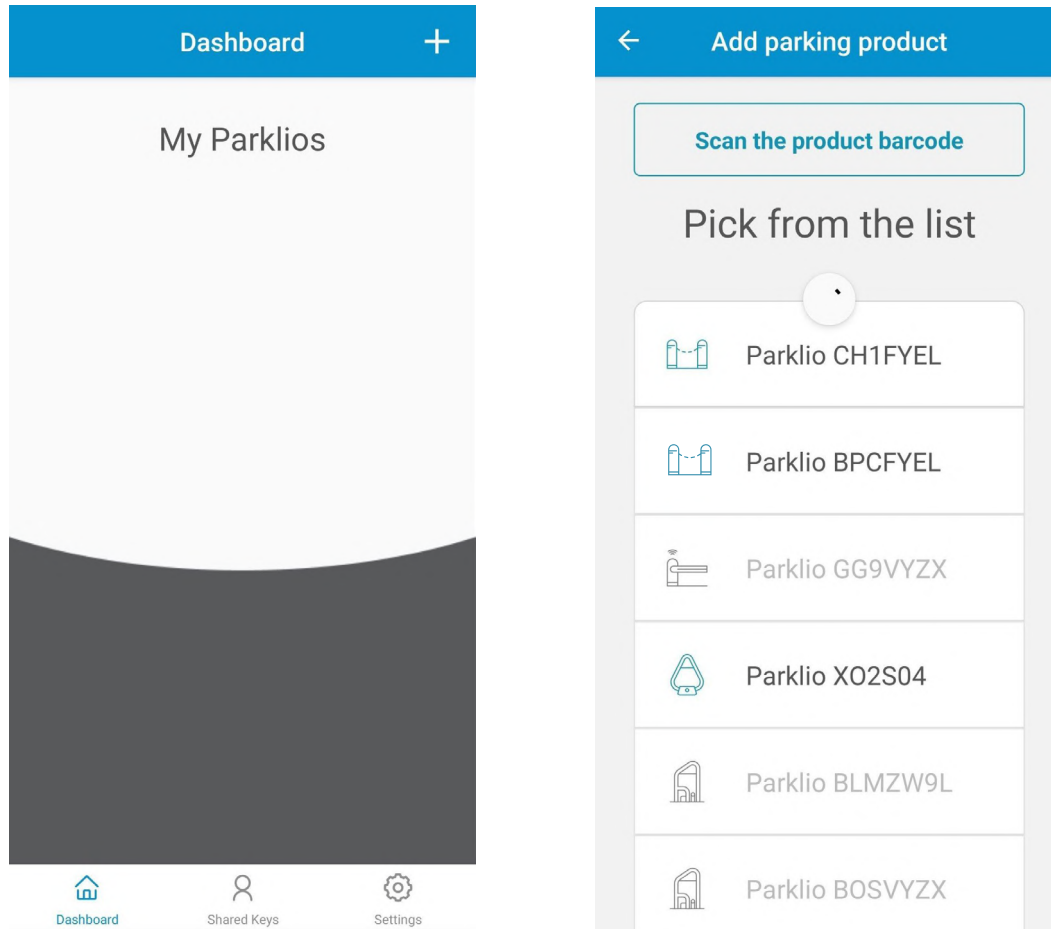
To login via Apple account simply press the *Sign in with Apple ID* button.

If the user has an existing Parklio account enter your email and password associated with the account into the corresponding fields and press *Login*.

In case a Parklio account has not been created previously press the *Sign Up* button which will open a new screen. There the user may input his email and password to create an account. After an account has been created the user may use his credentials to login into the application.

■ 9.3. Adding the chain to your account

After logging in the dashboard containing all your parklio devices will be displayed.



To add a chain to the account press the + button on the top right corner of the dashboard. The Add parking product screen opens and the smartphone starts scanning for nearby Parklio devices. This step should be done in close proximity to the Parklio device you are adding.

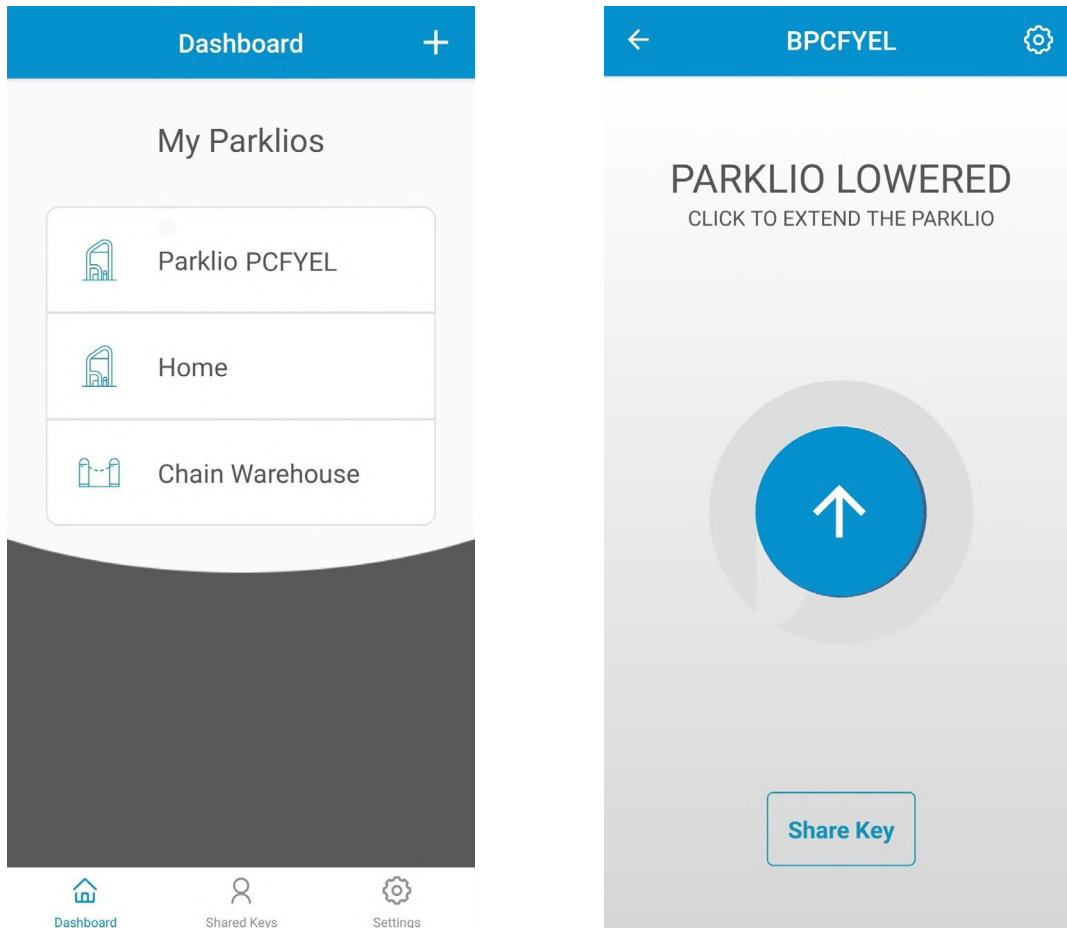
Grayed out devices represent Parklio devices that are already set up. When the scanning is complete select the device you wish to add from the list of available devices. The device will be set up automatically and added to the users account.

In the above example screenshot by clicking on *Parklio BPCFYEL* the application starts the process of setting the chain up. The process is automatic and the user is notified at the end.

■ 9.4. Connecting to the chain

To be able to operate the chain, view the state and change the chain settings it is necessary to connect to the chain.

This is done by going to the Dashboard and clicking on the chain to connect to.



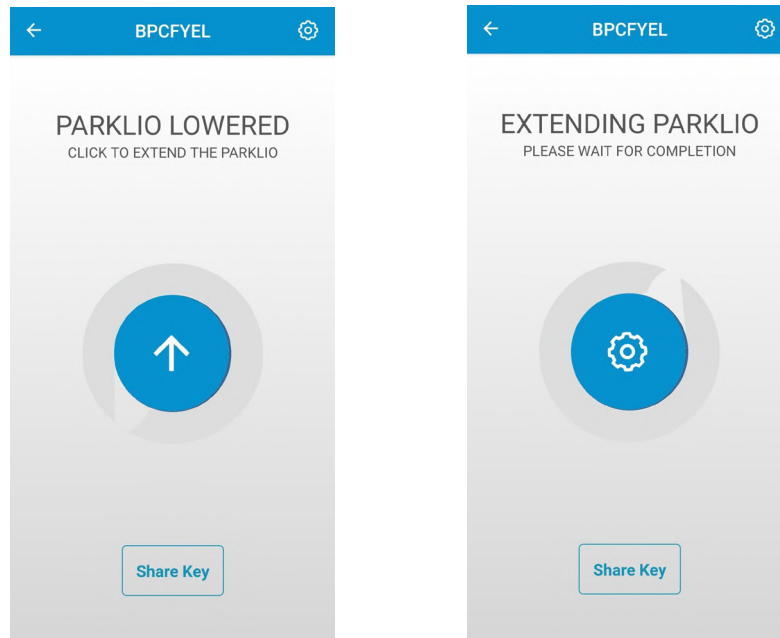
After a successful connect the screen will show the chain status:

- **PARKLIO LOWERED** - Indicates the chain is down (open)
- **PARKLIO EXTENDED** - Indicates the chain is up (closed)
- **PARKLIO EXTENDING** - Indicates the chain is moving up (closing)
- **PARKLIO LOWERING** - Indicates the chain is moving down (opening)
- **CHAIN JAMMED** - The chain jammed while moving up or down, check for any obstructions
- **AUTHENTICATION FAILED** - There was an error with communication to the chain or with the chain digital key, the key was probably reset

■ 9.5. Opening and closing the chain

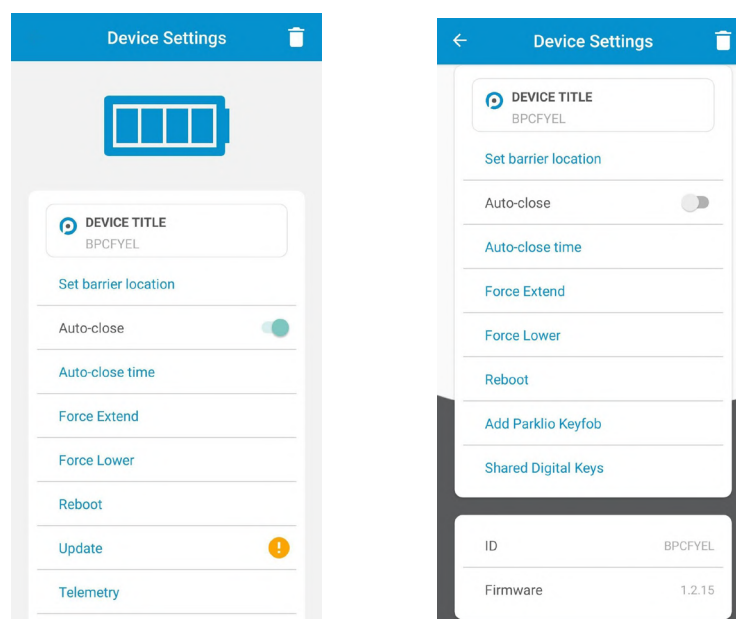
Opening and closing of the chain is possible only when the user is connected to the chain and while the chain is in the EXTENDED or LOWERED state.

By clicking the button in the center of the main screen the chain will lower or extend.



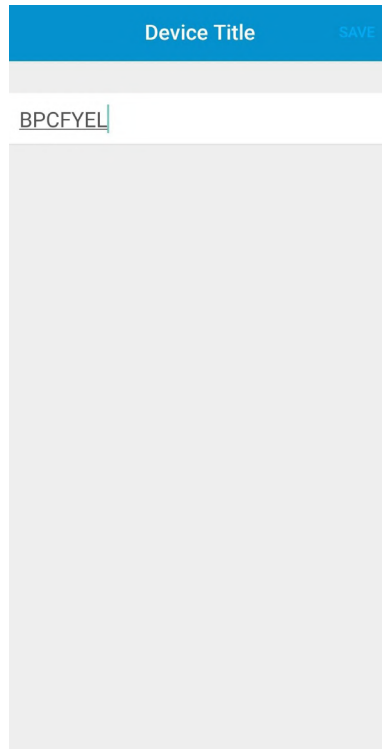
■ 9.6. Chain settings and information

Clicking the gear icon in the top right of the chain screen will bring up the chain settings. In the settings screen it is possible to view device information like the firmware version and ID, set the auto/close option and use the force extend and lower options.



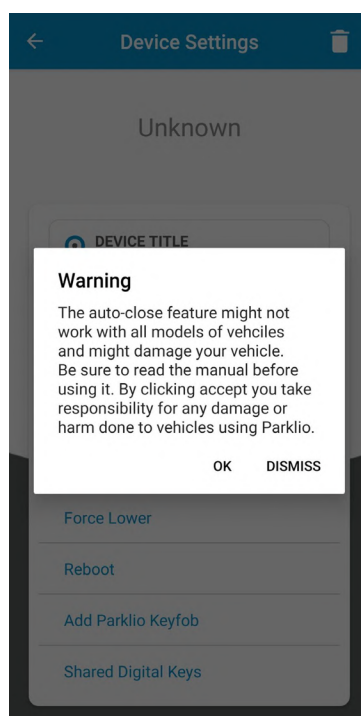
Change the device name

Parklio devices allow the user to change their name, so they can be more easily identified. To change the device name click on the *DEVICE TITLE* in the settings. Change the name of the device and click *SAVE*. The new name will now be displayed.



Change auto-close settings

To enable chain auto-close toggle the auto-close button. A warning message will be displayed. To change the auto-close interval press the *Auto-close Time* button. The user may choose an auto-close time interval from 5 s to 120 s.



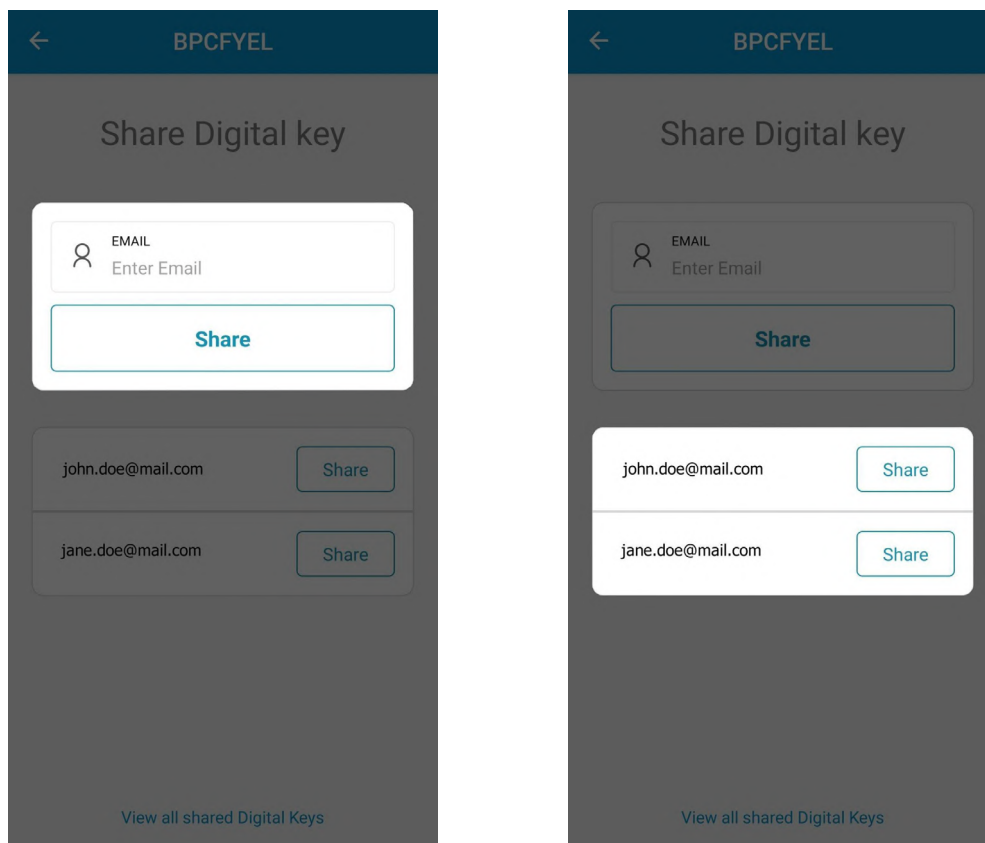
Key sharing

An important feature of all Parklio products is the option for key sharing. The application allows the owner of the device to share the digital key of his device.

To use this feature an internet connection is required. It is not required to be connected to a chain via bluetooth.

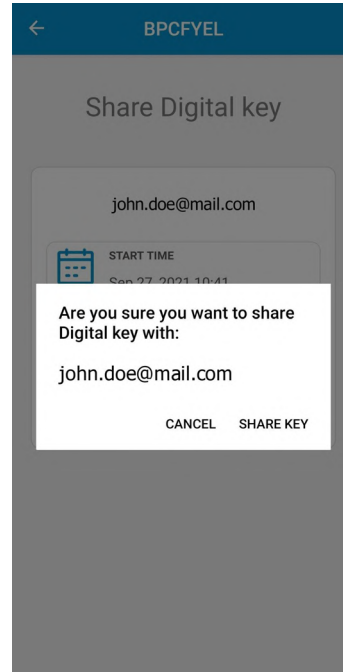
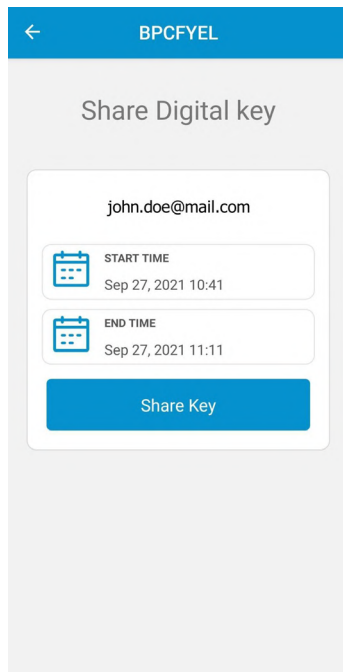
All keys have a validity period, the key becomes active at the start date and is valid until the end date. A key may be shared to multiple users and multiple keys may be sent to one user.

In order to share a key press the Share Key button on the main chain screen.



The first step is to enter the email of the user to whom the key will be shared or to choose from the list of previously shared users.

Next, it is required to select the key *START TIME* and *END TIME* using the calendar. After the start and end time are set press the Share Key button and confirm.

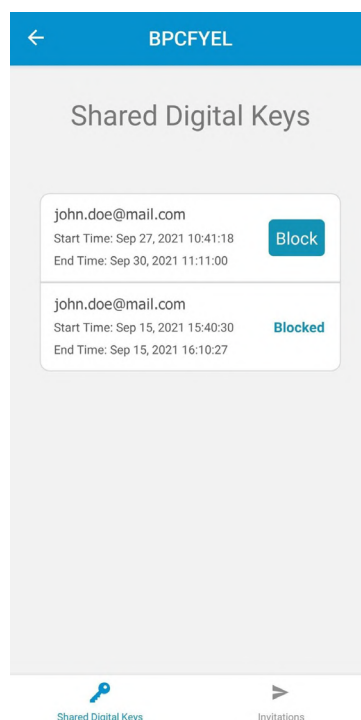


Blocking shared keys

If it is necessary to remove access from a user to whom a key was shared it is possible to do this from the Parklio Connect application.

To use this feature an internet connection is required. It is not required to be connected to a chain via bluetooth.

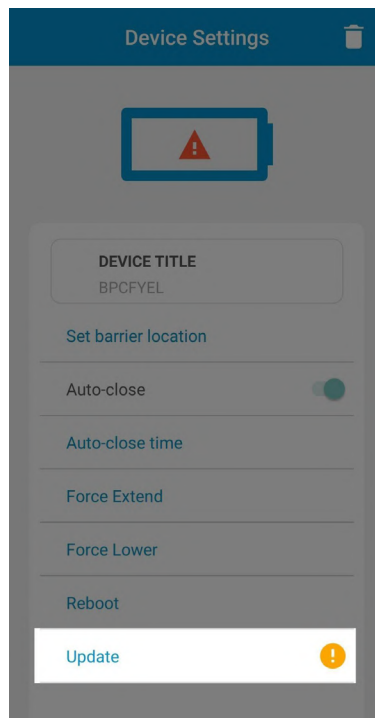
In the *Device Settings* > *Share Digital Key* screen, press the *View all shared Digital Keys* at the bottom of the screen. All keys shared for the selected device are displayed. To block a certain user click on the *Block* button next to the user. Share keys can also be viewed from the *Device Settings* screen by clicking on Shared Digital Keys.



Updating the chain

Parklio Smart Parking Chain get feature improvements by using OTA (Over-The-Air) updates. These updates are carried out manually by the user. An orange icon near the update button in the chain settings is shown if an update is available.

When updating the chain make sure there is no vehicle located on top of the chain. Please stay close to the chain for the whole duration of the update.

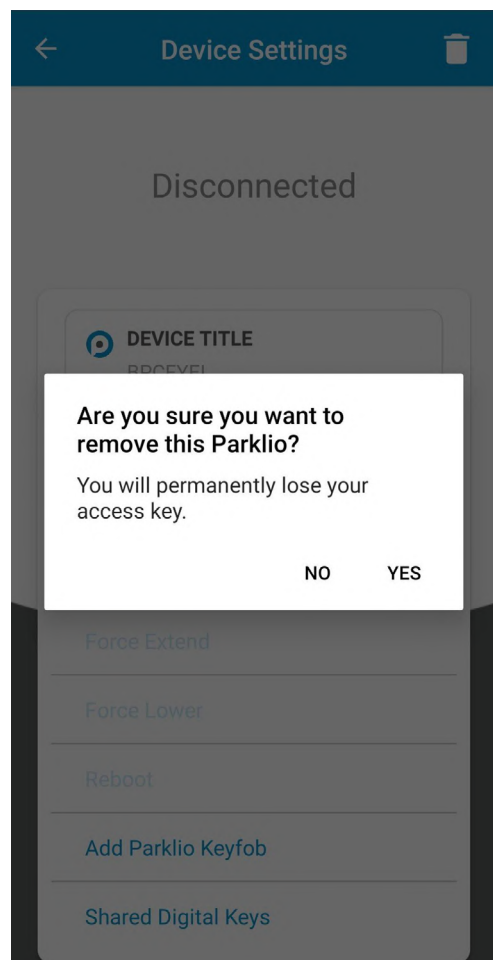
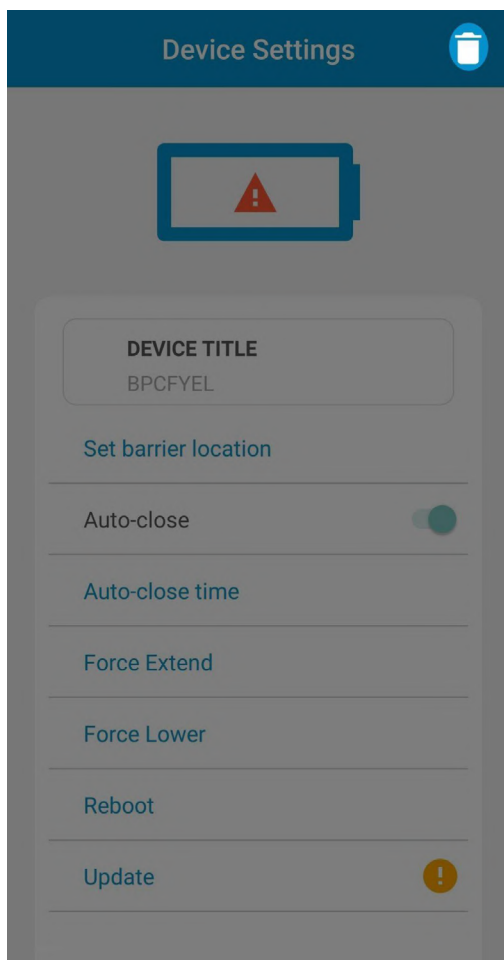


To update the chain click the *Update* button in the *Device Settings* screen and press Start. Stay close to the device while the update is downloading.

Removing the chain

In order to remove the chain from your account or to delete a key which was shared to you enter the *Device Settings* screen and press the garbage can icon. A confirmation will pop up, press Yes.

When a device is deleted from your account all sent guest keys are still valid. They can only be invalidated by performing a chain key reset or when the chain is added to another account.



10. Maintenance plan (every 6 months)

1. Cut the power supply off or disconnect the batteries if present. Clean and grease the guide internally.
2. See if there are wired parts and replace these if necessary.
3. Grease the internal transmitting chain.
4. Check the fixation nuts.
5. Control the electrical connections
6. Supply the power again. Check out the correct functioning of the obstacle recognition (encoder system).
7. Check out the correct functioning of all and of the security commands.

11. Connection of the braking joint



STEP 1



STEP 2



STEP 3

12. Technical data

Power supply	230 Vac 50 Hz
Current Draw	1.0 A
Motor Power	60 W
Motor Power	645 Nm
Service	50 %
Protection Degree	IP 34
Lubrication	Permanent
Weight	25 Kg
Max chain weight	8.5 Kg

13. Declaration of conformity

CONFORMITY:

Parklio d.o.o. declares, the Parklio chain follows the European norms and directives:

2006/95/CE-Low voltage electrical equipment; 89/336/CEE-Electromagnetic compatibility. EN 60335-1, EN 55014-1, EN 55014-2, EN 61000-3-2, EN 61000-3-3

Parklio d.o.o. declares, the control board follows the directive 95/05/EC (R&TTE).



Parklio | Smart parking solutions

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