blueberry
PLUS

Installation Manual

PRODUCT DOCUMENTATION R2 3.0

Powered by i-charging

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blueberry
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blueberry

1. ABOUT THE MANUAL

The purpose of this manual is to provide the steps and settings required for mechanical and electrical installation of blueberry PLUS charging station.

Please make sure that this manual is carefully read and ensure that all safety notices given are followed.

All technical details, specifications and design characteristics of the product may change without prior notice. The content of this document was carefully checked, however, in case of any inaccuracy, the user is asked to report it to i-charging. This manual should be saved for future reference.

2. IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual must be read carefully before the installation and operation of the blueberry PLUS charging station. Incorrect operation as a result of non-compliance with the instructions provided by this manual may lead to severe injuries or damages.

The working steps described must only be carried out by qualified personnel who, based on their knowledge and experience, can assess, and carry out all steps described in this installation manual and recognize potential hazards. The blueberry PLUS charging station shall be installed, connected, and approved for operation according to local codes and regulations. Under no circumstances the compliance with the information in this manual relieve the user to comply with all applicable local codes and safety standards.

The user must under no circumstances make any changes to the blueberry charging station or use it in a manner that was not designed for. Any disregard of this instruction represents a safety risk and will void the warranty with immediate effect.

Damages that may occur resulting from custom installations, that are not described in this document are not i-charging responsibility.

GROUNDING INSTRUCTIONS

The blueberry PLUS charging station shall be connected to an equipment grounding conductor or a grounded, metal, and permanent wiring system.

BEFORE CHARGING

Before operating the blueberry PLUS charging station, make sure that the surrounding environment is free from hazards, that the blueberry does not have any error message on the display and that the charging cable(s) are not damaged.

SAFE CHARGING SESSION

Perform the charging process as described in the User Manual. Once the process is completed, the plug must be placed in the correspondent holder.

In Case of Fire

In case of an emergency, the main switch of the switchboard power supply shall be turned off.

In case of fire, the main switch of the switchboard power supply shall also be turned off and the source of the flame must be eliminated with a class C fire extinguisher. All components of blueberry PLUS charging station are self-extinguishable which means that in case of fire, once the source of the flame has been removed, it will cease burning.

End of Life Disposal

Do not dispose blueberry PLUS at public landfill sites. According to the European directive 2012/19/EU (WEEE2) on waste electrical and electronic equipment, the device is excluded from the scope of application, being classified as a large-scale stationary industrial tool. Act in accordance with the local waste utilization regulations. The equipment should be dismantled by specialized companies.

2.1. Safety Notices

Special warnings and safety measures may appear throughout this document or on the equipment to warn of potential hazards or to call attention.

The symbols carry the following meanings:

RISK OF ELECTRIC SHOCK!

Procedures marked with this symbol must not be carried out under any circumstances before following the “DANGER” instructions.

Actions contrary to these safety notices may lead to severeinjury and death.

WARNING!

Procedures marked with this symbol should be carried out with special care.
Hazards that may lead to personal injuries.

CAUTION!

Procedures marked with this symbol must be carried out with special care.
Hazards that may lead to damage in the equipment itself or to other electric devices.

PLEASE NOTE!

Sections marked with this symbol are intended to draw attention to important information that is necessary for the reliable operation of the blueberry charging station.

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3. PRODUCT INFORMATION

The blueberry PLUS charging station represents the current state of technology and complies with all current technical safety requirements to power plug-in electric vehicles (PHEV) and battery electric vehicles (BEV) today. It is designed for ultra-fast charging in both public and private locations, indoor or outdoor, such as retail and commercial parking spaces, fleet charging stations, highway rest areas and workplace. blueberry PLUS allows sequential and simultaneous charging, through dynamic power allocation to each output. The system has a User Unit and up to three Power Units (max 200kW each). Due to its modularity, it is possible to add 50kW power modules at any time, up to a maximum of 600kW.

All values below @25 °C (77 °F) except where indicated.

3.1. Electrical Properties

	CE	North America
INPUT		
Input Voltage [V a.c.]	3x 340 - 530 +PE	3x 340 - 530 +PE
Max. Input Current @ Pnominal [A]	N_{pm}* 76 @ 400V	N_{pm}* 63 @ 480V
Input Power [kVA]	Power Unit: N_{pm} * 53 User Unit: 0.5	Power Unit: N_{pm}* 53 User Unit: 0.5
Input Frequency [Hz]	45 - 66	45 - 66
Efficiency [%]	95	95
Power Factor	0.99	0.99
THDi [%]	< 4	< 4
OUTPUT		
Voltage Range [V d.c.]	150 to 1000	150 to 1000
Max. Current [A d.c.]	125, 250, 300[1]	125, 300[1]
Max. Power [kW]	N*50	N*50
GENERAL		
Rated Diversity Factor	1	1
Pollution Degree	3	3
Installation systems	TT and TN-S	TT

* N_{pm} – number of power modules – up to twelve

[1]300A continuous with a peak performance of 500A

3.2. Mechanical properties

Dimensions [H x D x W]	Power Unit:	1600x605x1500mm	62.99x23.82x59.06in
	blueberry PLUS - User Unit:	2000x405x690mm	78.74x15.94x27.16 in
Weight	Power Unit:	Up to 700 Kg	up to1543 lbs
	blueberry PLUS - User Unit:	271 Kg	575.41 lbs
Dimensions of package [H x D x W]	Power Unit:	1850x850x1650mm	72.83x33.46x64.96in
	blueberry PLUS - User Unit:	2220x840x1240mm	87.40x33.07x48.82in
Weight including package	Power Unit:	up to 710 Kg	up to 1565 lbs
	blueberry PLUS - User Unit:	315 Kg	694.46 lbs
Impact protection	IK10		
Housing	Steel		
Corrosion protection	C5 according to ISO12944:2018		

3.3. HMI properties

Contactless card specification	ISO/IEC 14443A/B, ISO/IEC 15393, Mifare, NFC reader mode; Optional: Credit card reader, GooglePay and ApplePay
Local Interface	Touch screen 32''/ Mobile App

3.4. Communications

Communication protocol	OCPP1.6 / 2.0
Network Connection	2G/3G/4G (LTE) Modem; 10/100 Base-T Ethernet ; Wi-Fi

3.5. Environment properties

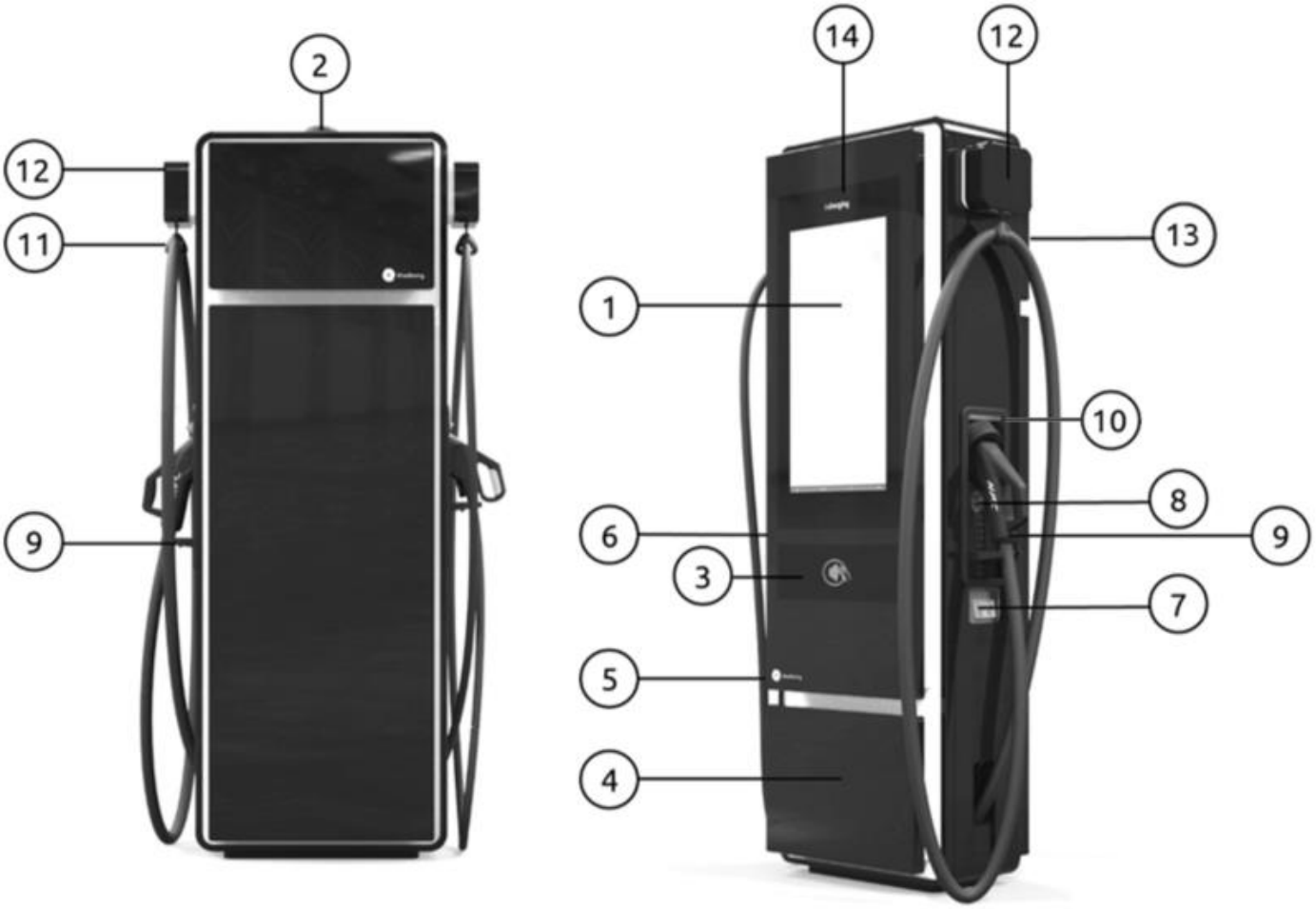
Operating Temperature	-35 °C; +50 °C | -31°F; 122°F
Maximum Elevation	2000 m | 6561 feet
Protection Degree	Power Unit: IP55/ "Rainproof" User Unit: IP54/ "Rainproof"
Humidity [%]	5 to 95, non-condensing
Operating Noise Level [dBA]	<53 - blueberry PLUS - User Unit <65 - Power Unit

3.6. Standards

DC Charging	EN IEC 61851-1/ EN61851-23 / IEC61851-21-2/ CHAdeMO
	DIN70121/ ISO15118 including Plug&Charge EcoG | OS
	UL 2231-1/ UL 2231-2/ UL 2202 (under certification)
Connection	CCS2 (IEC 62196-3) / JEVS (G105) SAE J1772
EMC emission	IEC 61000-6-4
EMC Immunity	IEC 61000-6-2
Usability	ADA
Eichrecht	EN 50470-1: 2006 / EN 50470-3: 2006 DIN EN 50470-1:2007/DIN EN 50470-3:2007 REA Dokument 6-A PTB-A 50.7 MessEG / MessEV

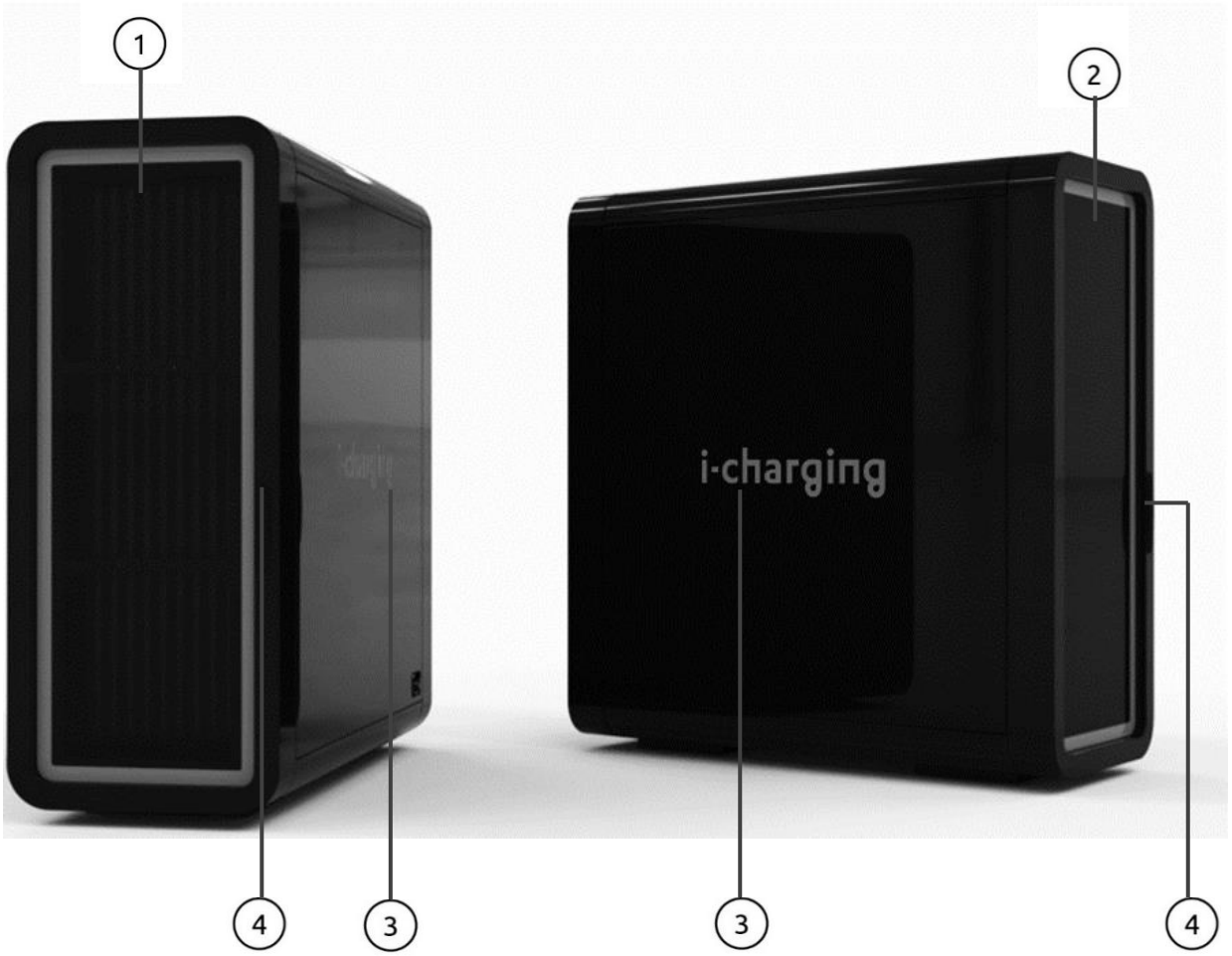
3.7. Product overview

3.7.1. blueberry PLUS - User Unit



1. Touch screen display
2. External antenna
3. Authentication | Payment system
4. Air inlet area
5. blueberry logo
6. Locking system (DIN 18252) (optional)
7. Energy meter (optional)
8. Fast stop button
9. Connector support
10. Status led
11. Cable clamp
12. Cable management system
13. Air outlet area
14. i-charging logo

3.7.1. Power Unit



1 Air inlet area

2 Air outlet area

3 i-charging logo

4 Locking system (DIN 18252) (optional)

PLEASE NOTE!
The blueberry PLUS charging station can have up to three power Units.

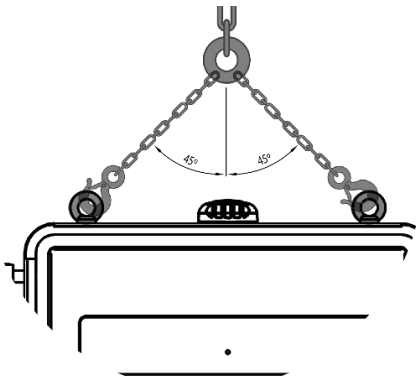
4. HANDLING

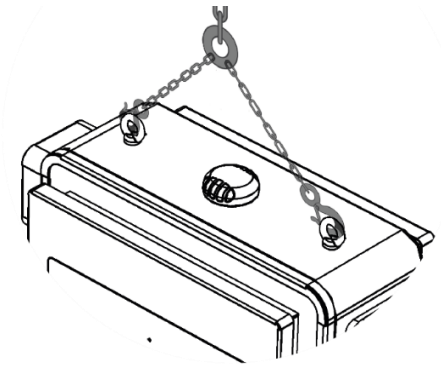
The blueberry PLUS charging station is delivered in a package with the following dimensions [Hx D x W] and weight:

- blueberry PLUS - User Unit: 2220 mm x 840 mm x 1240 mm – 315 Kg
  (87.40 in x 33.07 in x 48.82 in – 694.46 lbs)
- Power Unit: 1850mm x 850mm x 1650mm– up to 710 Kg
  (72.83x33.46x64.96in – up to 1565 lbs)

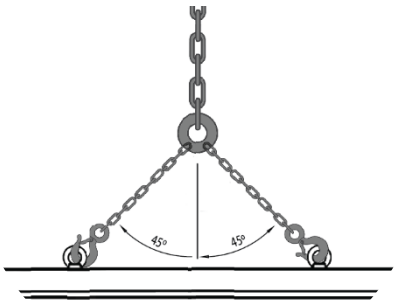
Both equipment can only be transported vertically, using a forklift, pallet jacket, or using a crane and the eyebolts in the top of the equipment, as presented below. In this case, the angle must be 45º for the weight to be evenly distributed between the eyebolts.

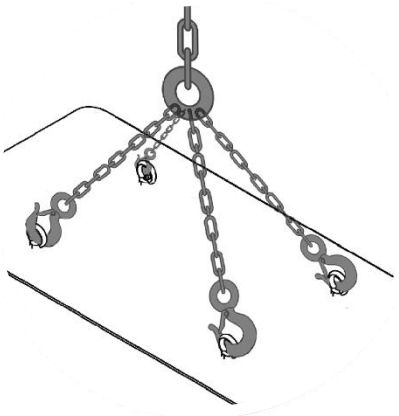
blueberry PLUS - User Unit





Power Unit





WARNING!
Be careful when moving the equipment. Due to its heavy weight, incorrect transportation may lead to personal injuries or can damage the equipment itself.

i-charging strongly recommends unpacking the blueberry PLUS charging station only in the installation site and as close as possible to the commissioning date.

Before unpacking, it is important to check that there are no damages in the package, and after it, it is critical to verify that the equipment is in good conditions and unharmed.

Once the blueberry PLUS is already placed in the installation site, the eyebolts must be replaced by stop ends, supplied by i-charging.

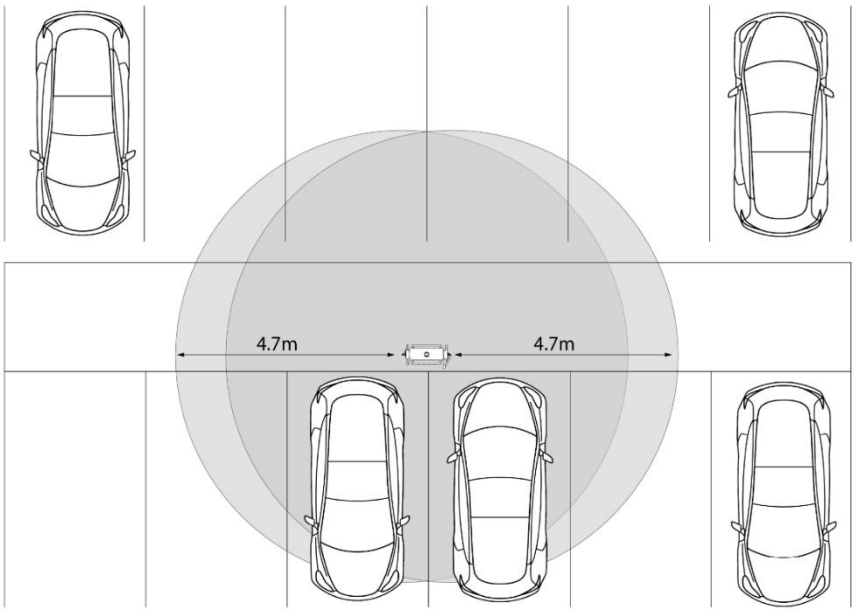
PLEASE NOTE!
If any problem has been identified in the equipment, please, make a formal complaint to the carrier and notify customer care.

5. INSTALLATION REQUIREMENTS

5.1. Site configuration

The blueberry PLUS charging station is a fixed stationary equipment and it is intended to be used both indoor and outdoor. For the placement of the charger there are several factors, such as, the configuration of the parking areas, vehicles to charge and the reach of the charging cables, that can influence the suitability of the site.

The blueberry PLUS charging station is equipped with a cable management system for the DC cable that prevents it from touching the floor. With this system, the total cable reach of the charger is 4.7m (15.42 feet). The charger should be positioned considering the parking spots and the cable reach.



WARNING!
The installation of blueberry PLUS shall not be made in a commercial garage (repair facility) or closer than 6,1m (20 feet) of an outdoor motor fuel dispensing device.

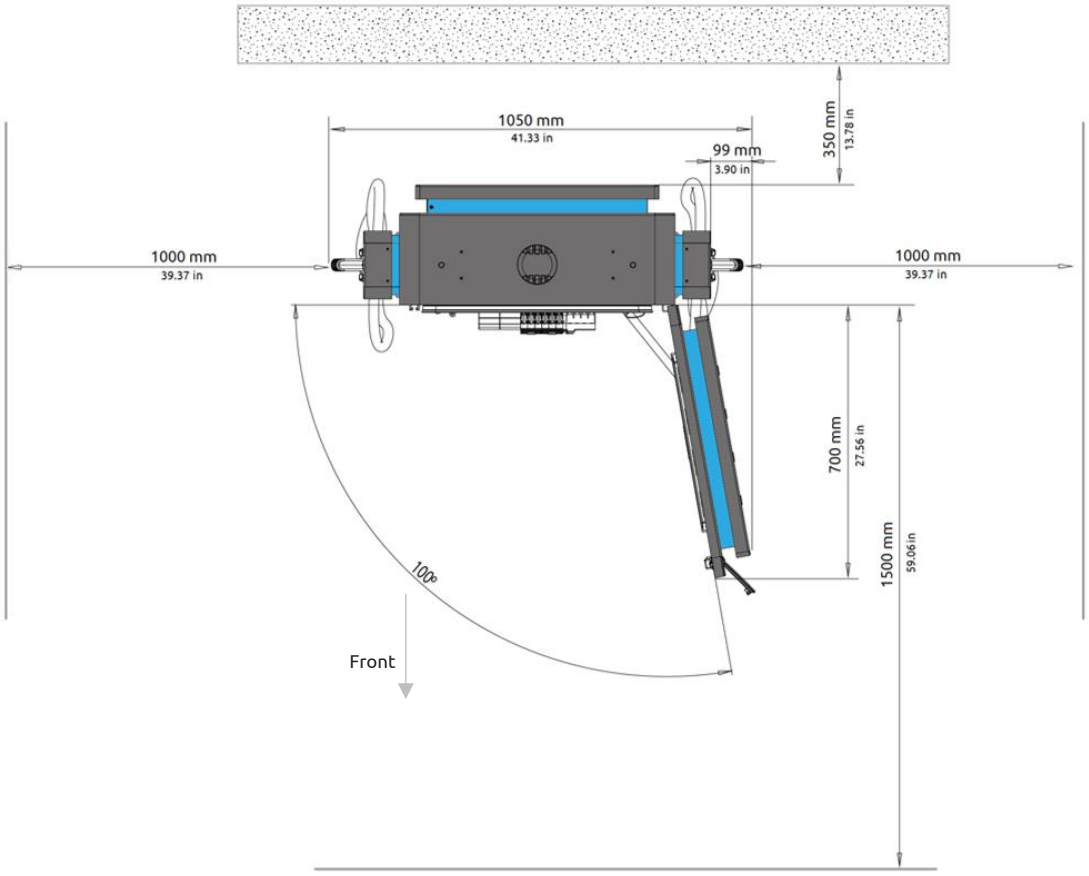
PLEASE NOTE!

To ensure the access for maintenance and free air circulation in the ventilation system, a clearance around the blueberry PLUS charging station must be kept.

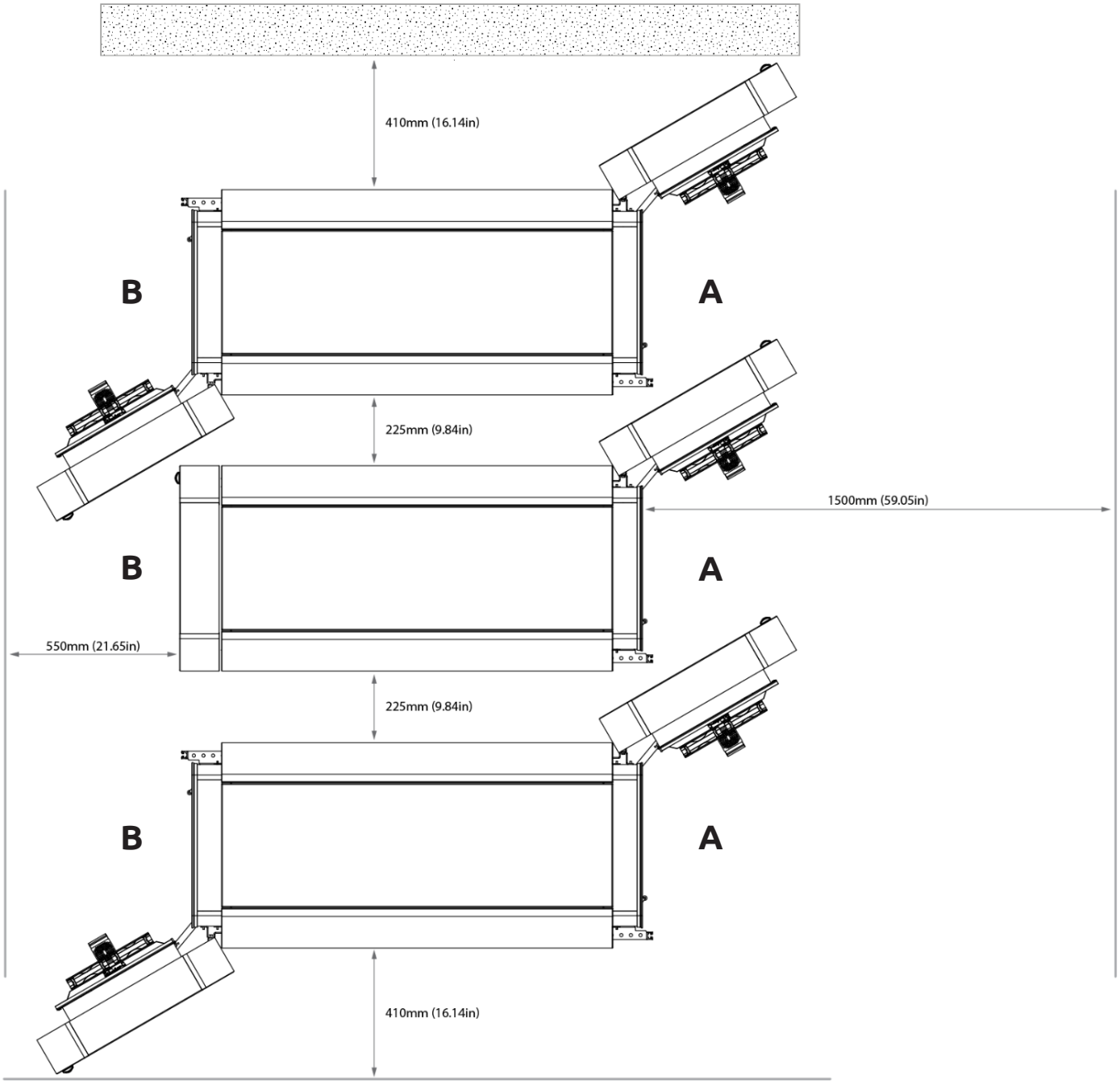
The blueberry PLUS charging station has a service door in the front, and it has also an air inlet in the front and an air outlet in the rear. Do not install any objects near the inlets and outlets and, if necessary, take precautions to prevent snow blocking them.

Please make sure that the distances presented below are satisfied and that there are no road barriers that prevent the door from opening.

blueberry PLUS - User Unit



Power Unit



PLEASE NOTE!

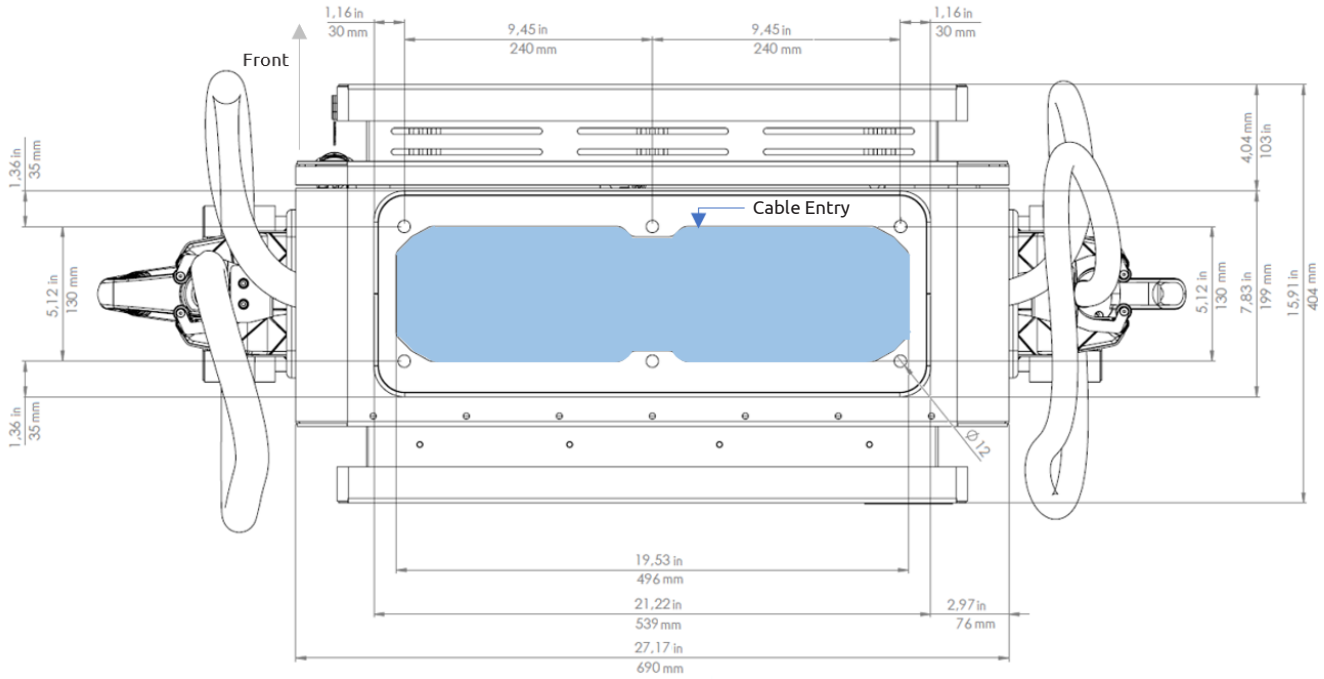
A and B side are identified on chapter 5.2.2.

For harsh environments, i-charging strongly recommends installing the blueberry PLUS charging station under a shelter. It will ensure the performance and longevity of the equipment and it will provide a comfortable environment for users during periods of high and low temperatures, rain, snow and heavy dust.

5.2. Foundation

The blueberry PLUS charging station shall be mounted in a solid ground, concrete foundation/floor. The foundation shall be dimensioned according with the drill layout and local standards. The drilling layout is presented below.

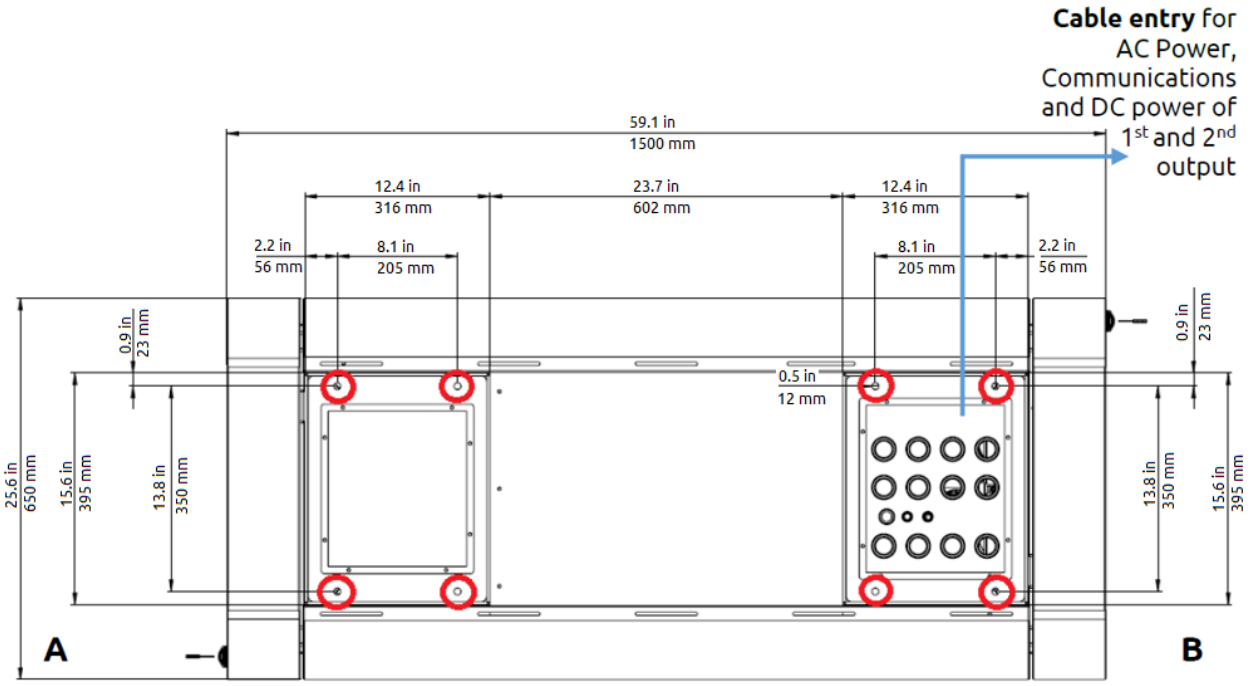
5.2.1. blueberry PLUS - User Unit



To fix the blueberry PLUS - User Unit, 6 x M8 chemical anchors shall be applied in the concrete foundation, with a maximum outside length of 25mm (0.98in). Please be aware that the cable shall be routed through the area, positioned on the center of the equipment base.

To route the cable through the equipment cable glands, i-charging recommends a ground mounting base with the dimensions of the blue area 100mm x 450mm (3.94in x 17.72in) and 400mm (15.75in) deep.

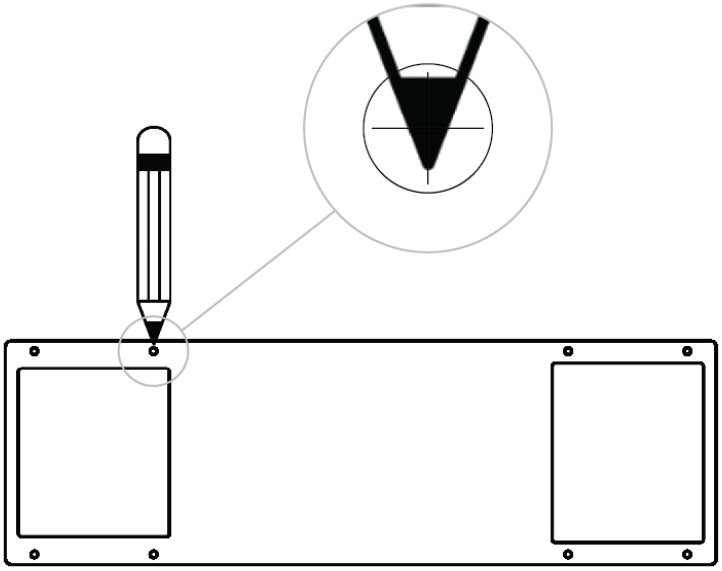
5.2.2. Power Unit



To fix the Power Unit, 8 x M12 chemical anchors shall be applied in the concrete foundation, with a maximum length of 25mm (0.98in).

PLEASE NOTE!

i-charging can supply a metal drilling layout template to assist on making the holes in the right position. Please contact our commercial department for more information on this drilling template.



5.3. Upstream Protection

CAUTION!
The blueberry PLUS charging station protection devices outside the charger are to be done according to the local regulations and codes.

Power Unit

i-charging recommends an upstream short circuit protective device for each power unit according to the following table:

CE

Power	Short circuit protective device
50kW	125A 3P C curve, >16kA
100kW	250A 3P C curve, >16kA
150kW	320A 3P C curve, >16kA
200kW	400A 3P C curve, >16kA

North America

Power	Short circuit protective device
50kW	125A 3P C curve, >16kA
100kW	200A 3P C curve, >16kA
150kW	300A 3P C curve, >16kA
200kW	400A 3P C curve, >16kA

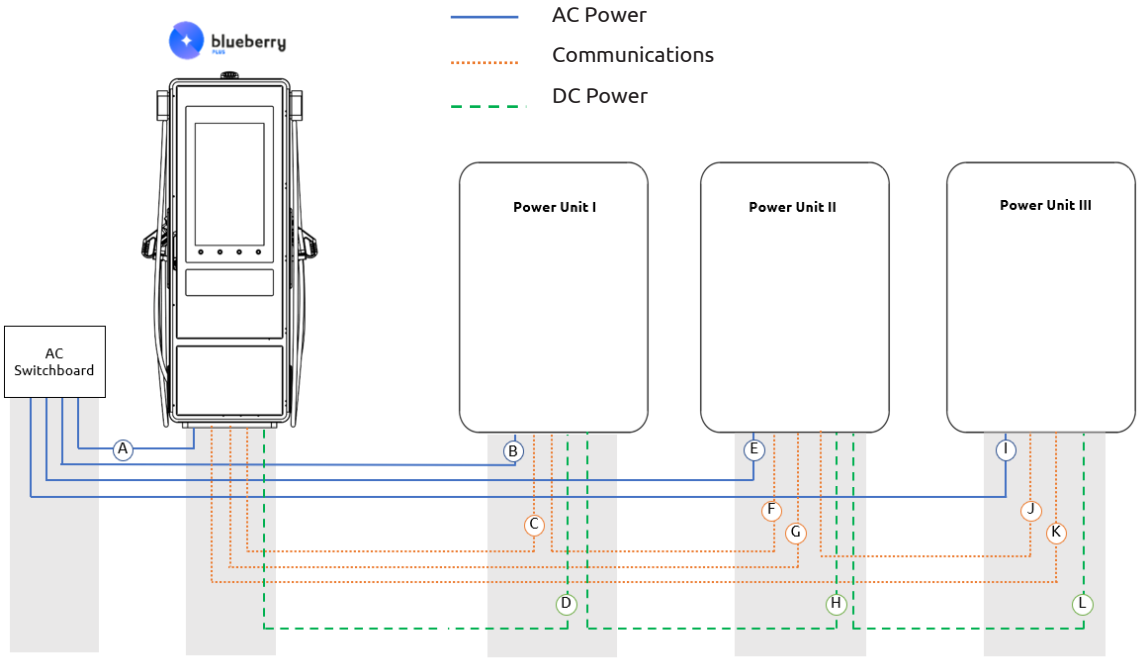
i-charging also recommends using a residual current device of 300mA Type A.

blueberry PLUS - User Unit

i-charging recommends an upstream installation of a short circuit protective device of 10A 3P C curve, 10kA rated short-circuit breaking capacity.

i-charging also recommends using a residual current device of 30mA Type A.

5.4. Cabling and Interconnections



For installations no longer than 50m (164 feet) and considering the maximum output power (600kW) and two 300A outputs, i-charging recommends:

	Pipe	Cables	Source	Destination
1st Power Unit [Up to 200kW]	**A:** AC Supply (electronics)	**nº1:** 1x 3phase cable (copper) 2,5 mm² (14AWG)	**AC switchboard**	**blueberry PLUS - User Unit**
			L1	S1.L1
			L2	S1.L2
			L3	S1.L3
		nº2: 1x earth cable (copper) 50 mm2 (1 AWG)	**AC switchboard**	**blueberry PLUS - User Unit**
			PE	PE
	B: AC Supply Power Unit I (Power)	**nº3:** 3 x conductor (copper) 150 mm² (300 MCM)	**AC switchboard**	**Power Unit I**
			L1	S1.L1
			L2	S1.L2
			L3	S1.L3
		nº4: 1x earth cable (copper) 95 mm2 (3/0 AWG)	**AC switchboard**	**Power Unit I**
			PE	PE
	C: Signals	**nº5:** 1x Ethernet cable CAT6 FTP / STP	**Power Unit I**	**blueberry PLUS - User Unit**
			X11	X11
		nº6: 1x shielded cable (copper) 9x 1,5 mm² (16 AWG)	**Power Unit I**	**blueberry PLUS - User Unit**
			X10.1	X10.1.1
			X10.2	X10.1.2
			X10.3	X10.1.3
			X10.4	X10.1.4
			X10.5	X10.1.5
			X10.6	X10.1.6
			X10.7	X10.1.7
			X10.8	X10.1.8
			X10.9	X10.1.9
	D: DC Power	**nº7:** 4x conductor (copper) 150 mm2 (300 MCM) 1000V	**Power Unit I**	**blueberry PLUS - User Unit**
			DC1+	DC1+
			DC1-	DC1-
			DC2+	DC2+
			DC2-	DC2-

	Pipe	Cables	Source	Destination
2nd Power Unit [Up to 400kW]	**E:** AC Supply Power Unit II (Power)	**nº9:** 3 x conductor (copper) 150 mm² (300 MCM)	**AC Switchboard**	**Power Unit II**
			L1	S1.L1
			L2	S1.L2
			L3	S1.L3
		nº10: 1x earth cable (copper) 95 mm2 (3/0 AWG)	**AC Switchboard**	**Power Unit II**
			PE	PE
	F: Signals	**nº11:** 1x Ethernet cable CAT6 FTP / STP	**Power Unit I**	**Power Unit II**
			X11	X11
	G: Signals	**nº12:** 1x shielded cable (copper) 9x 1,5 mm² (16 AWG)	**Power Unit II**	**blueberry PLUS - User Unit**
			X10.1	X10.2.1
			X10.2	X10.2.2
			X10.3	X10.2.3
			X10.4	X10.2.4
			X10.5	X10.2.5
			X10.6	X10.2.6
			X10.7	X10.2.7
			X10.8	X10.2.8
			X10.9	X10.2.9
	H: DC Power	**nº13:** 4x conductor (copper) 150 mm² (300 MCM) 1000V	**Power Unit II**	**Power Unit I**
			DC1+	DC1+
			DC1-	DC1-
			DC2+	DC2+
			DC2-	DC2-
3rd Power Unit [Up to 600kW]	**I:** AC Supply Power Unit III (Power)	**nº14:** 3 x conductor (copper) 150 mm² (300 MCM)	**AC switchboard**	**Power Unit III**
			L1	S1.L1
			L2	S1.L2
			L3	S1.L3
		nº15: 1x earth cable (copper) 95 mm2 (3/0 AWG)	**AC Switchboard**	**Power Unit III**
			PE	PE
	J: Signals	**nº16:** 1x Ethernet cable CAT6 FTP / STP	**Power Unit III**	**Power Unit II**
			X11	X11
	K: Signals	**nº17:** 1x shielded cable (copper) 9x 1,5 mm² (16 AWG)	**Power Unit III**	**blueberry PLUS - User Unit**
			X10.1	X10.3.1
			X10.2	X10.3.2
			X10.3	X10.3.3
			X10.4	X10.3.4
			X10.5	X10.3.5
			X10.6	X10.3.6
			X10.7	X10.3.7
			X10.8	X10.3.8
			X10.9	X10.3.9
	L: DC Power	**nº18:** 4x conductor (copper) 120 mm² (4/0 AWG) 1000V	**Power Unit III**	**Power Unit II**
			DC1+	DC1+
			DC1-	DC1-
			DC2+	DC2+
			DC2-	DC2-

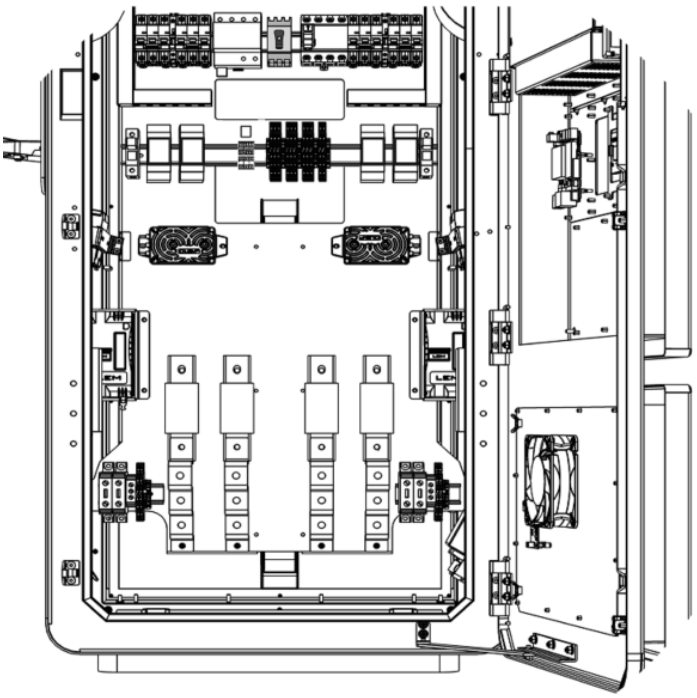
If the equipment has outputs with currents below 300A and it is not relevant for the customer a future proof installation, then consult the table below with the minimum cross section per output:

ID configuration	Output current	Minimum cross section per output Positive + Negative
1	**125A**	50mm² (1/0 AWG) + 50mm² (1/0 AWG)
2	**250A**	70mm² (4/0 AWG) + 70mm² (4/0 AWG)
3	**300A up to 500A** Future proof solution	150mm² (300 MCM) + 150mm² (300 MCM)

PLEASE NOTE!
The cable needs above are per output.
Depending on the cable characteristics, the nominal current may differ for the same cross section. **Please make sure that the chosen cable complies with the output current specified on the table above.**

6. INSTALLATION

6.1. blueberry PLUS - User Unit



TOOLS:

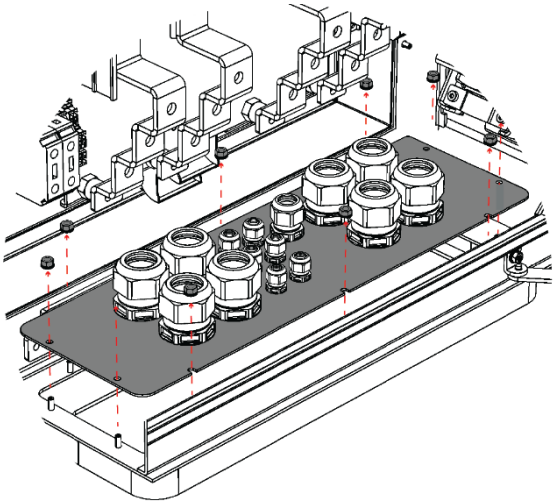
- Ratchet Wrench size 8 and 13
- Wire stripper pliers
- Crimping pliers
- Screwdriver

FASTENERS:

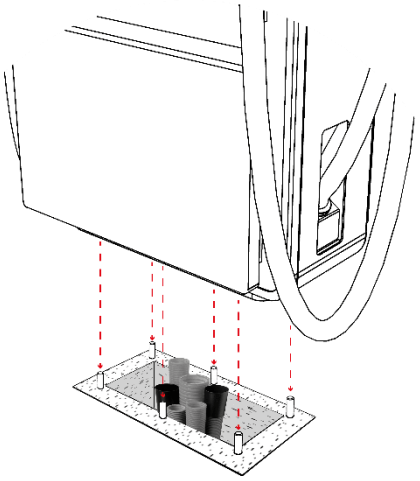
- 6 x M8 Hexagon Nuts
- 11 x M8 Washers
- 5 x M8 x 20 screw
- 9 x Insulated single end terminals, 1,5 mm² (16 AWG)
- 3 x Insulated single end terminals, 2,5 mm² (14 AWG)
- 1 x M8 Ring terminal, 50mm² (1/0 AWG)
- 4 x M8 Ring Terminal, 150mm² (300 MCM) or according to DC cables cross section

DANGER!

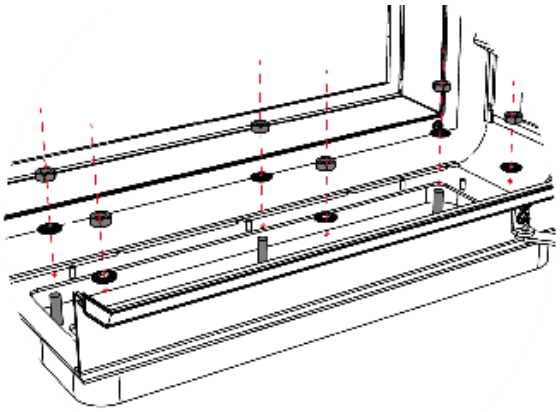
Make sure that the main switch of the Switchboard power supply that feeds the blueberry charger product is set to the off position.



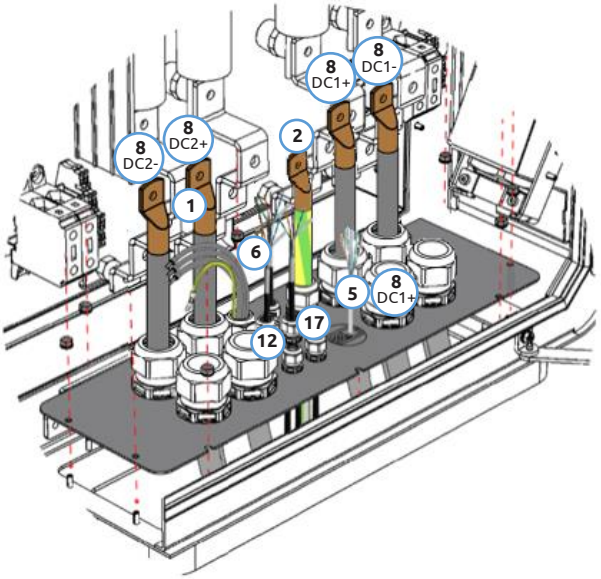
Step 1 – Remove the bottom plate from the blueberry PLUS - User Unit. It is necessary to untight 10x M5 hexagon nuts with a ratchet wrench size 8. Save the fasteners for tightening the DC cable glands plate again after STEP 9.



Step 2 – Place the blueberry PLUS - User Unit on the ground floor, matching the bottom holes with the chemical anchors.



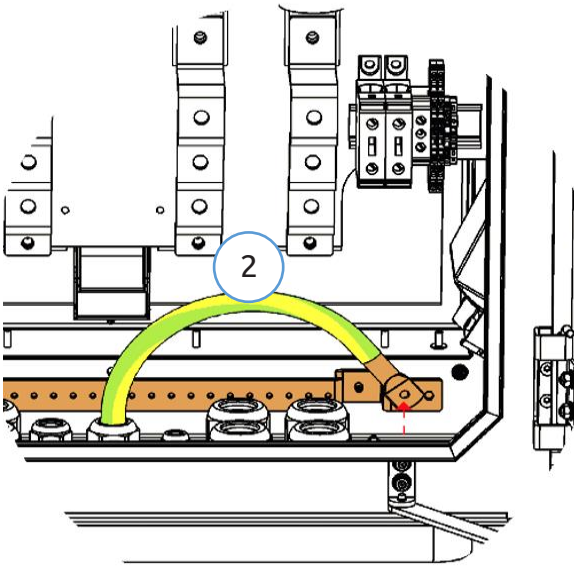
Step 3 – Place the matching washers and tight the hexagonal nuts to fix the blueberry to the ground. Use a ratchet wrench size 13.



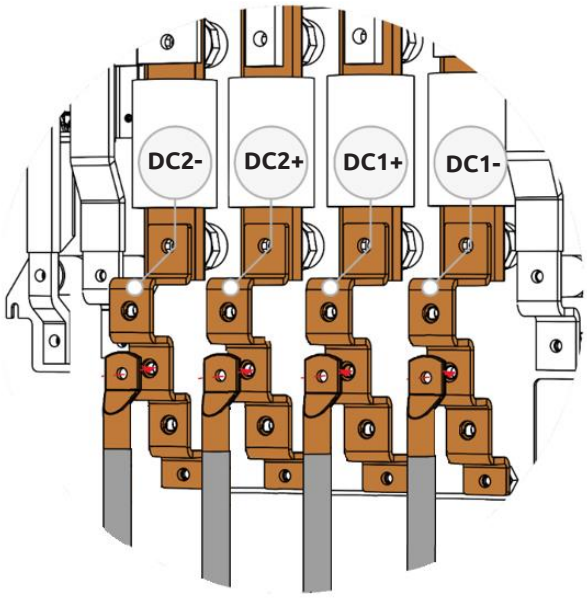
Step 4 – Route the cables through the cable glands and make sure that the cable number is the correct one (Refer to **Chapter 5.4** for **interconnections**).

DANGER!

Make sure that the main switch of the Switchboard power supply that feeds the blueberry charger product is set to the off position.

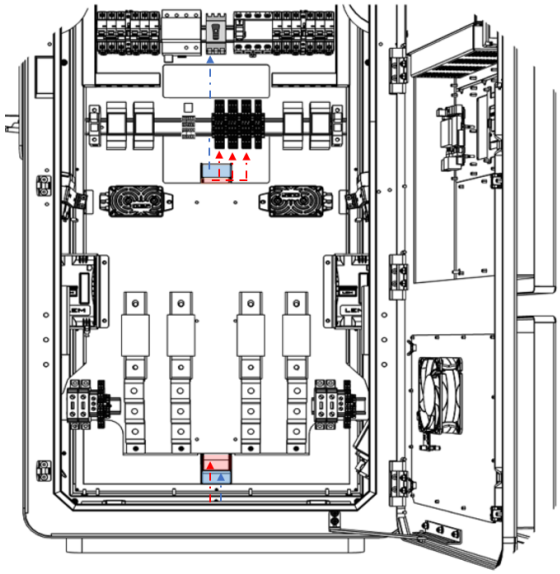


Step 5 - Connect the **earth cable** (cable nº1) to the busbar placed in the bottom of blueberry PLUS – User Unit, as shown in the image. For that, it is necessary to **crimp an M8 ring terminal** on the cable and then to tight it with an **M8 x 20 screw** on the busbar, with a **tightening torque of 28 N.m**.

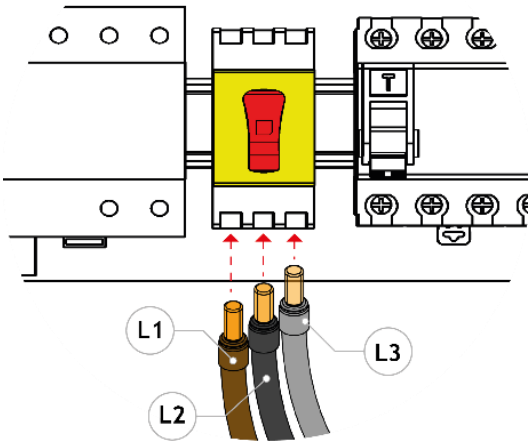


Step 6 - Connect the **DC power conductors** to the busbars placed in the bottom of blueberry PLUS - User Unit, as shown in the image.

For that, it is necessary to **crimp** an **M8 ring terminal** on the cables and then to tight it with a **M8 x 20 screw** with its matching washer ant nut, applying a **tightening torque of 28 N.m**.



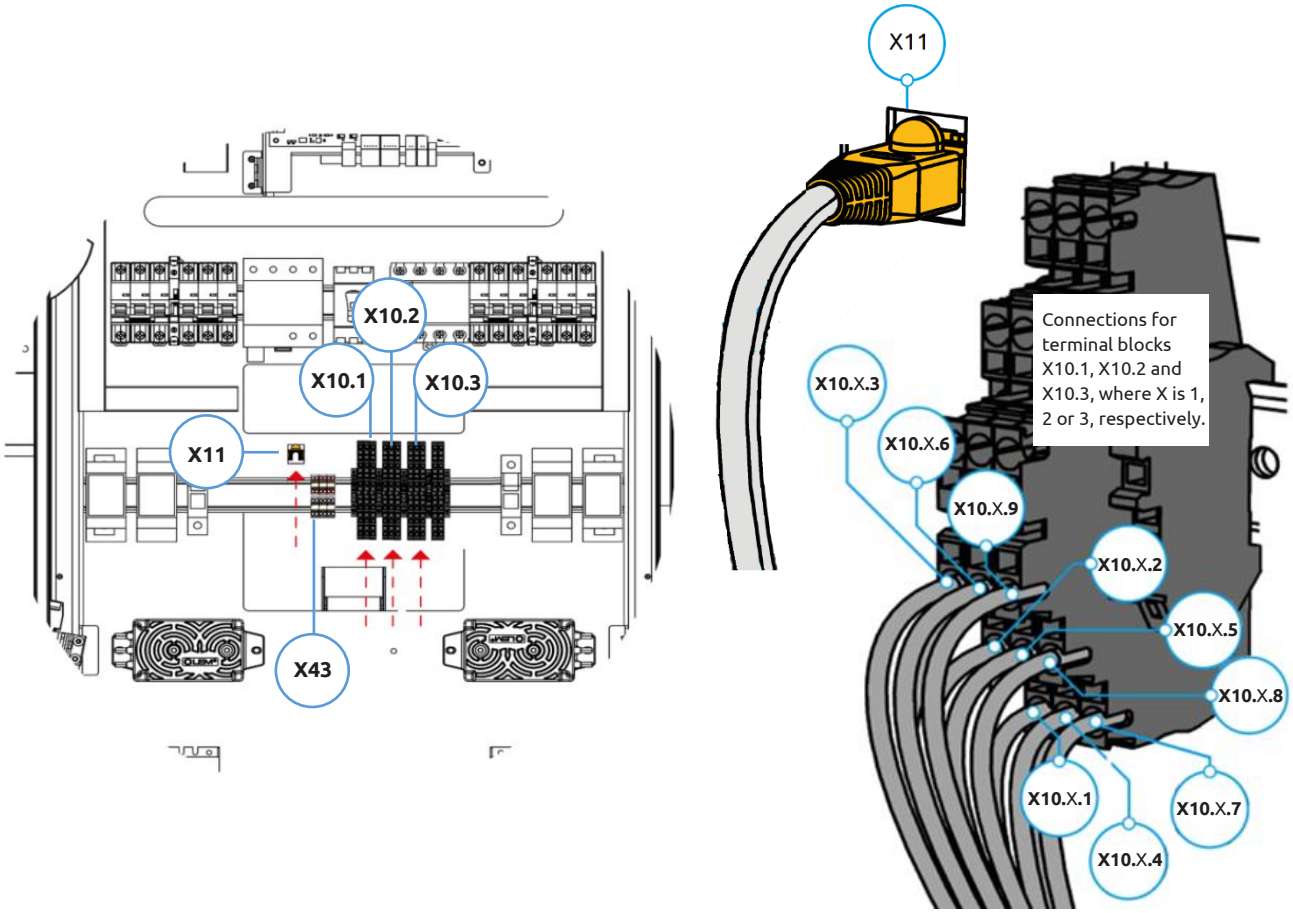
Step 7 – **Guide cables nº 5, nº6, nº12 and nº17** (if applicable) through the **conduit marked in red** and **cable nº1** through the **conduit marked in blue**, both placed behind the plate. Refer to **Chapter 5.4** for details on the **cabling numbers**.



Step 8 - Connect the **AC power conductors** to the **switch disconnector (S1)**. For that, it is necessary to **crimp** an **insulated single end terminal** on each cable. Connect the conductors with a **tightening torque** between **1.8 N.m and 2 N.m**.

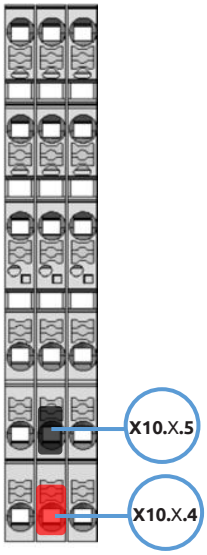
DANGER!

Make sure that the main switch of the Switchboard power supply that feeds the blueberry charger product is set to the off position.



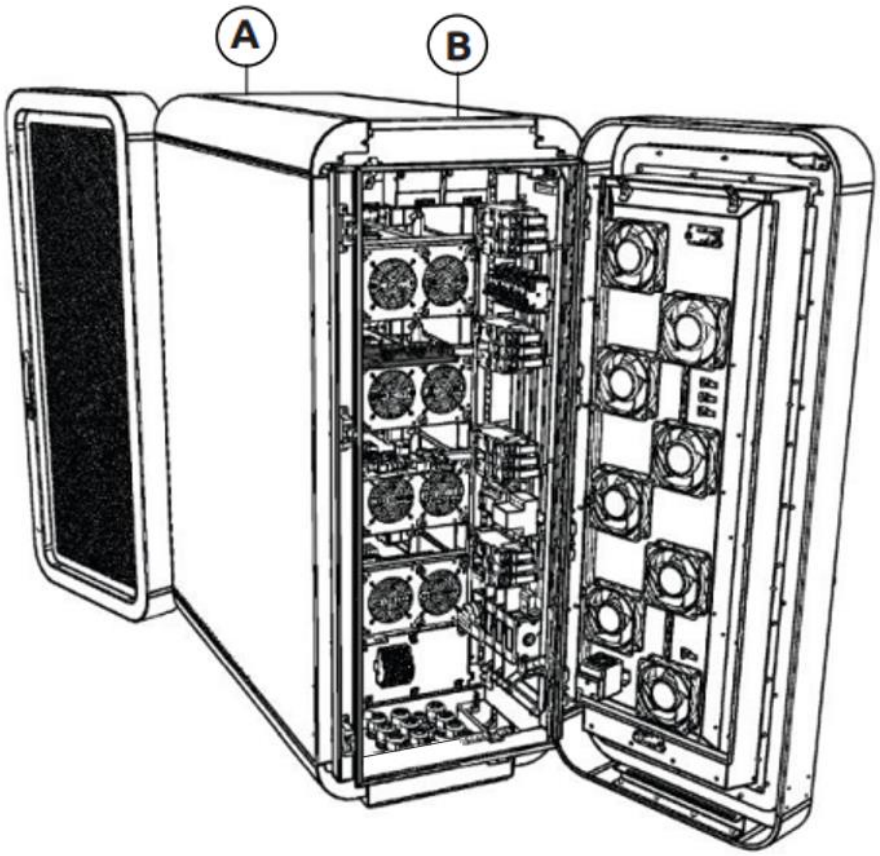
Step 9 - Connect the **signal conductors and** the **ethernet cable** to the terminal blocks **X10.1, X10.2** (if applicable – **2nd** Power Unit), **X10.3** (if applicable – **3rd** Power Unit) and **X11**, as shown in the image (Refer to Chapter 5.4 for interconnections details). For that, it is necessary to crimp single end terminals on each line of the shielded cable.

Before connecting X10.2 / X10.3, it will be necessary **to disconnect red and black lines in both ends** (X43 to X10.2 / X10.3), marked in the figure below. Please note that this is only to be done when it is necessary to connect X10.2 (two Power Units) or X10.2 and X10.3 (three Power Units).



After that, place the bottom plate that was removed in step 1 with the same fasteners.

6.2. Power Unit

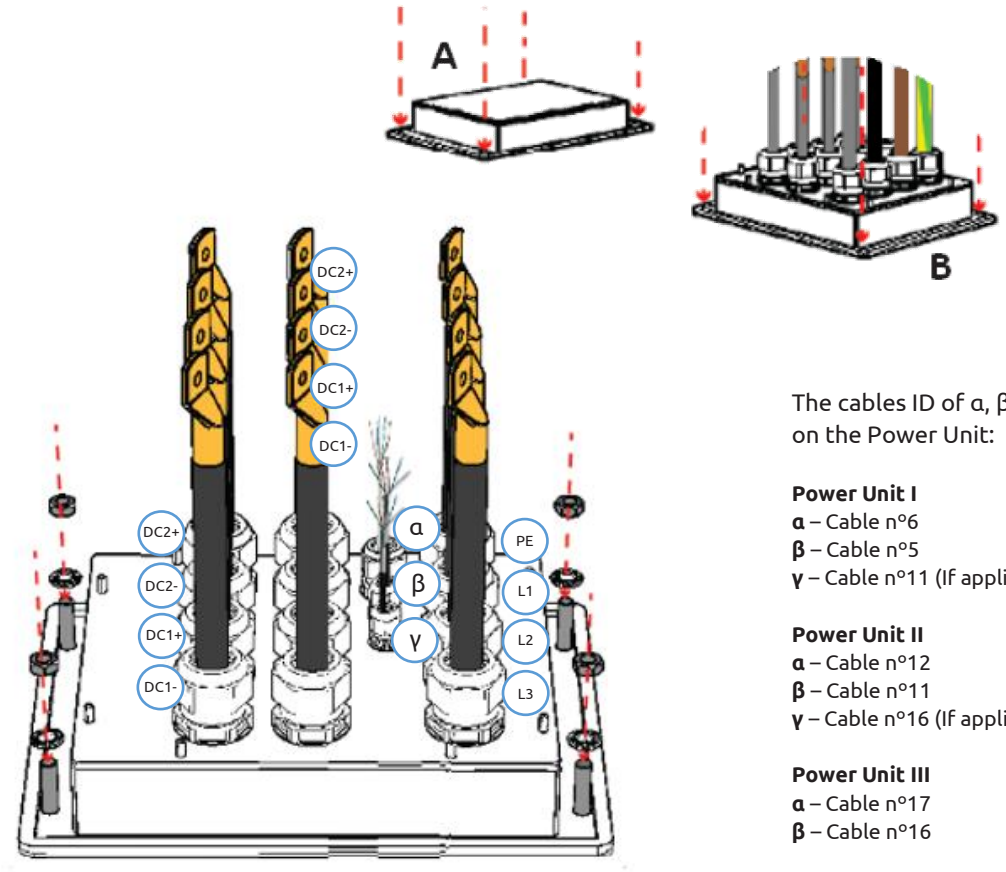


- Ratchet Wrench size 8, 13 and 18
- Wire stripper pliers
- Crimping pliers
- Screwdriver
- Phase sequence meter

- 3 x M10 Hexagon Nuts
- 3 x M10 Washers
- 8 x M8 Hexagon Nuts
- 8 x M8 Washers
- 1 x M8 x 20 screw
- 1 x M6 Washers
- 8 x M6 x 20 screw
- 9 x Insulated single end terminals, 1,5 mm² (16 AWG)
- 1 x M6 Ring terminal, 95mm² (3/0 AWG)
- 8 x M8 Ring Terminal, 120mm² (4/0 AWG) or according to DC cables cross section
- 3 x M10 Ring Terminal, 150mm² (300 MCM)

DANGER!

Make sure that the main switch of the Switchboard power supply that feeds the blueberry charger product is set to the off position.



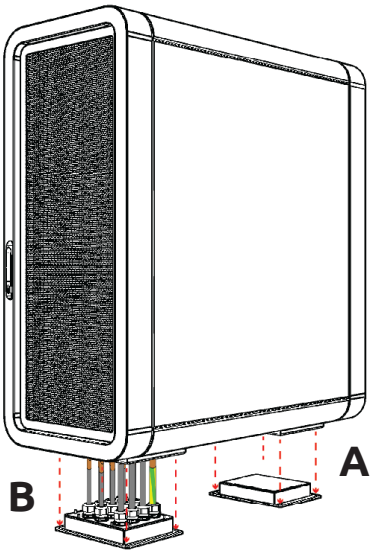
The cables ID of α, β and γ depends on the Power Unit:

Power Unit I
α – Cable nº6
β – Cable nº5
γ – Cable nº11 (If applicable)

Power Unit II
α – Cable nº12
β – Cable nº11
γ – Cable nº16 (If applicable)

Power Unit III
α – Cable nº17
β – Cable nº16

Step 1 – Place the cable gland boxes A and B on the ground floor, matching the holes of each box with the chemical anchors, and route the AC, DC and communication cables through the cable glands on side B, according to the image above (Refer to **Chapter 5.4** for **interconnections)**.



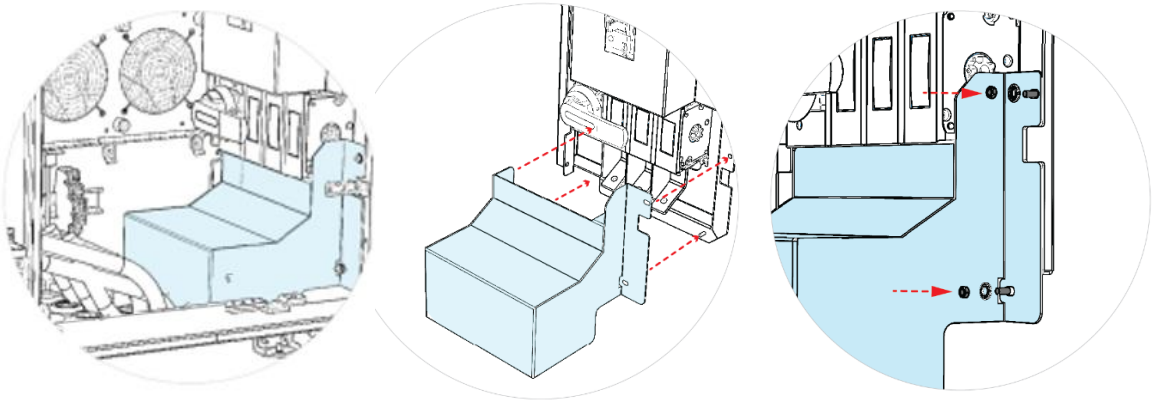
Step 2 – Place the power unit on the ground floor, matching the bottom holes with the chemical anchors and boxes that are already installed.

Make sure that the power unit is placed on the right position, the side B must be the side of the box that has cable glands.

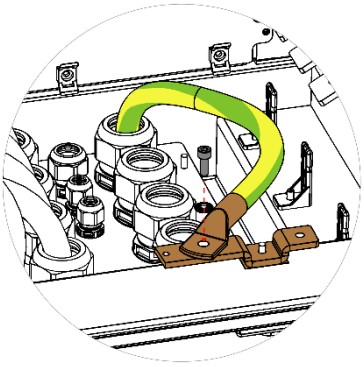
Place the matching washers and tight the hexagonal M12 nuts to fix the two boxes to the ground, from both sides. Use a ratchet wrench size 18.

DANGER!

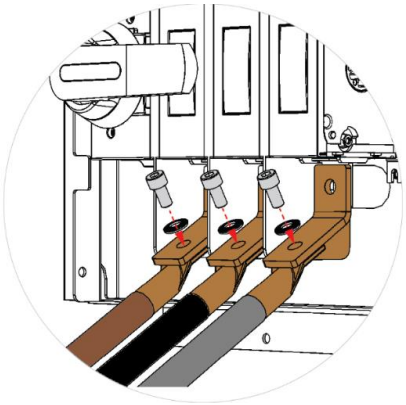
Make sure that the main switch of the Switchboard power supply that feeds the blueberry charger product is set to the off position.



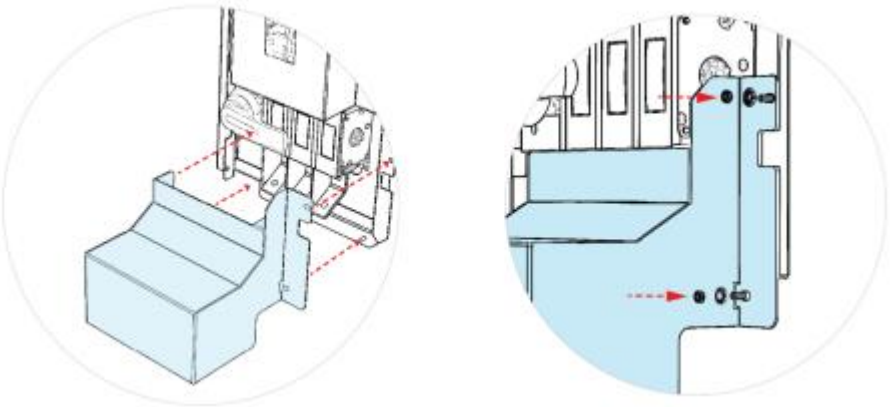
Step 3 – Remove IP2XB protection placed on the bottom of Power Unit (side B) and save the fasteners to assemble it again in Step 6



Step 4 - Connect the earth cable to the busbar placed in the bottom of Power Unit (side B). For that, it is necessary to crimp an M6 ring terminal on the cable and then to tight the ring terminal with a M6 x 20 screw on the busbar, with a tightening torque of 9 N.m. Please route the cable in a way that it will be possible to assemble the IP2XB protection again (Step 6).

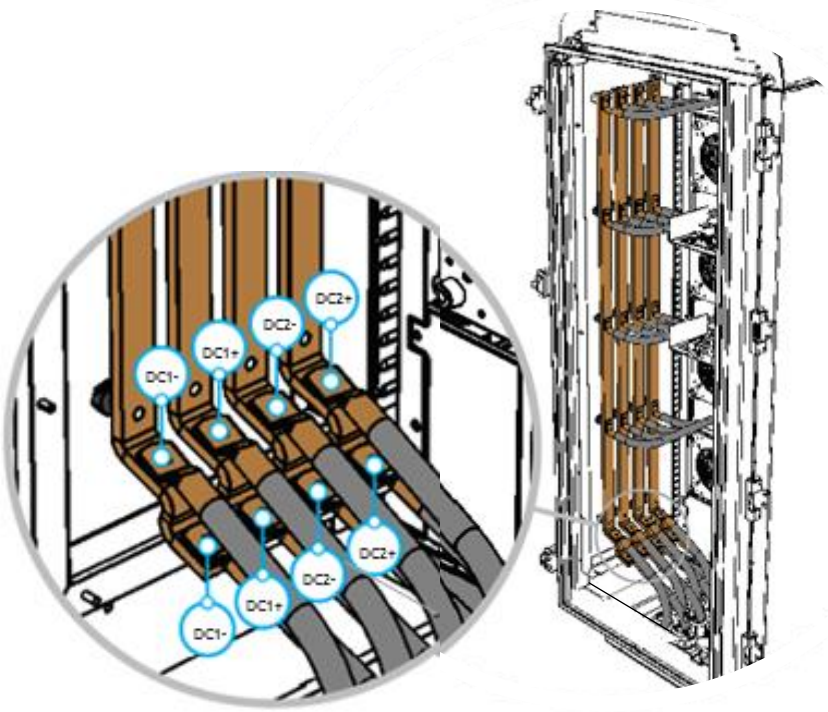


Step 5 – Connect the AC power conductors to the switch disconnector (S1) placed on the bottom of Power Unit. For that, it is necessary to crimp a M10 ring terminal on each cable. Ensure that the phases are connected in a clockwise direction. Ring terminals shall be placed below the switch disconnector bars (as shown in the image above) with an M10 screw with its matching washer ant nut. Apply a tightening torque between **30 N.m** to **37 N.m.**

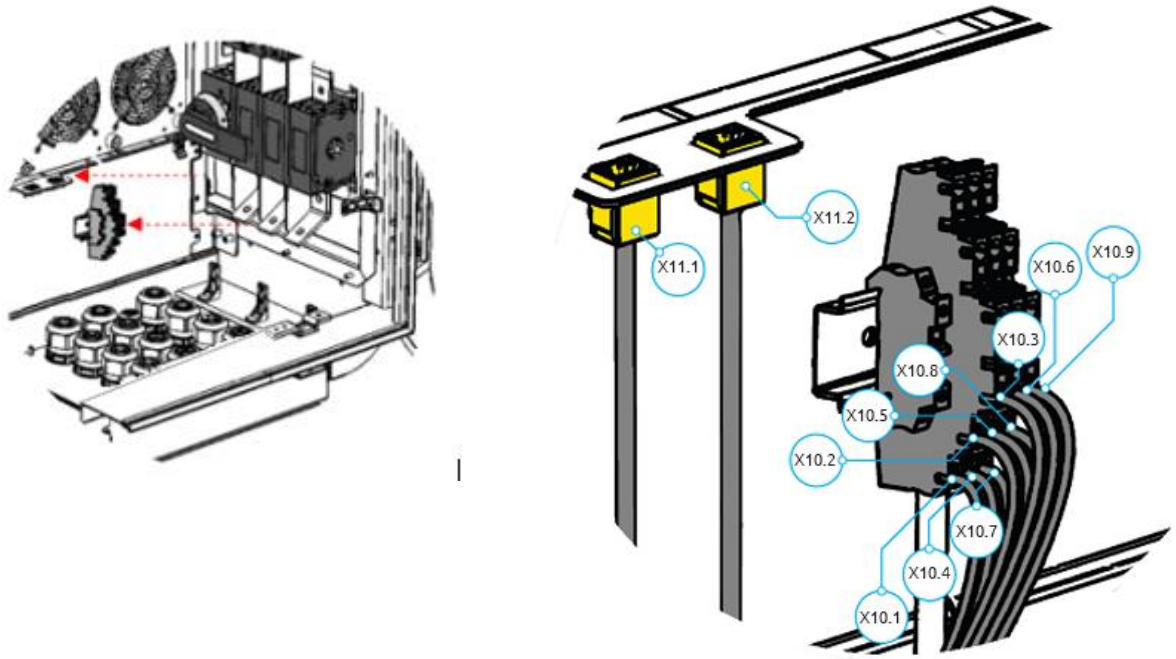


Step 6 - To ensure IP2XB, the switch disconnector protection shall be assembled again with the same fasteners.

DANGER!
Make sure that the main switch of the Switchboard power supply that feeds the blueberry charger product is set to the off position.

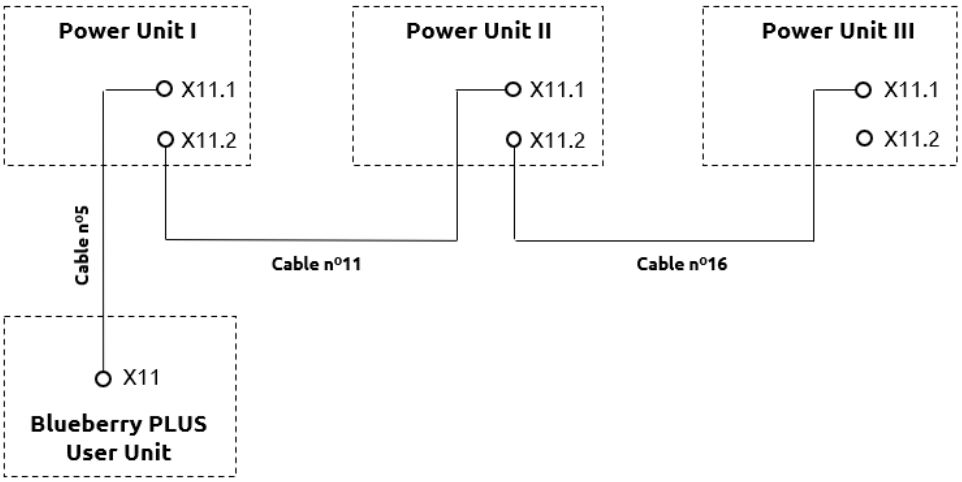


Step 7 - Connect the DC power conductors to the busbars placed in the B side of the Power Unit, as shown in the image. For that, it is necessary to crimp an M8 ring terminal on the cable and then to tight it with an M8 screw and its matching washer and nut, applying a tightening torque of **28 N.m.**



Step 8 - Connect the signal conductors to the **X10** terminal block and the **ethernet cable** (see figure below) to **X11.1 and/or X11.2**, placed in the bottom of the Power Unit DC side, as shown in the image. For that, it is necessary to crimp single end terminals on each line of the shielded cable.

The connection of each ethernet cable depends on the power Unit ID, as shown in the following figure:



Step 9 - Depending on the blueberry PLUS solution, there will be different configurations on the PCB **E3** and on terminal block **R7** (see image below for components location on the equipment):

- **Up to 200kW** (one Power Unit)
  - ✓ Nothing to be configured.
- **From 250kW to 400kW** (two Power Units):

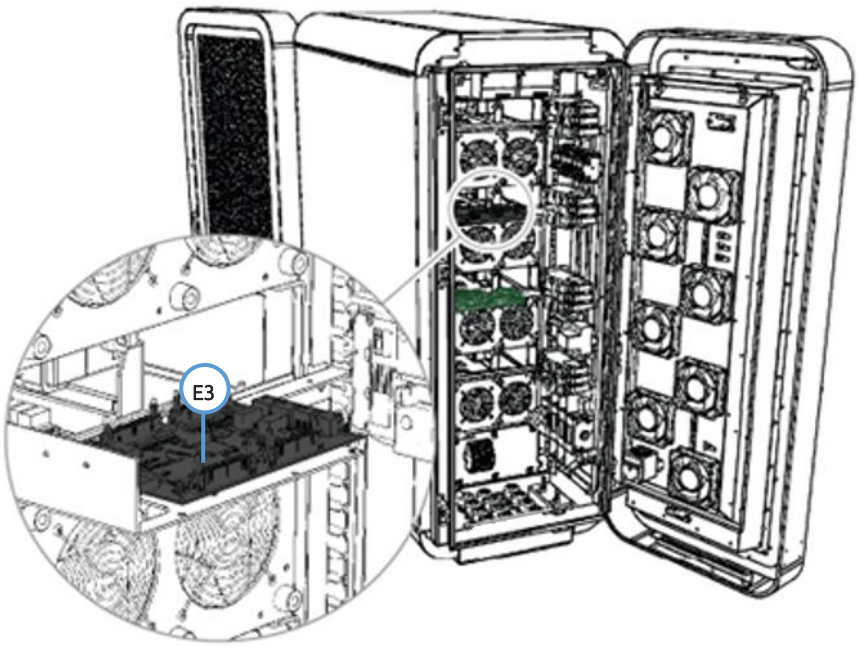
  Power Unit I:
  - ✓ **PCB E3** - **Remove** the jumpers **P5** and **P6**

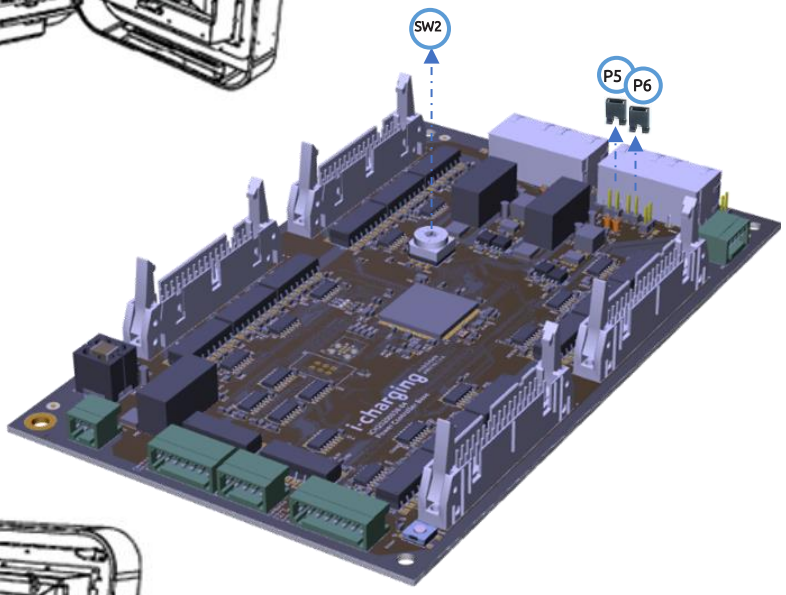
  Power Unit II:
  - ✓ **PCB E3** - **Set** the switch **SW2** to position **"2"**
  - ✓ **Terminal Block R7** - **Remove R7** and **apply** the **new resistor coding** (supplied by i-charging – 160 Ω) **marked** with **"PU II"**
- **From 450kW to 600kW** (three Power Units)

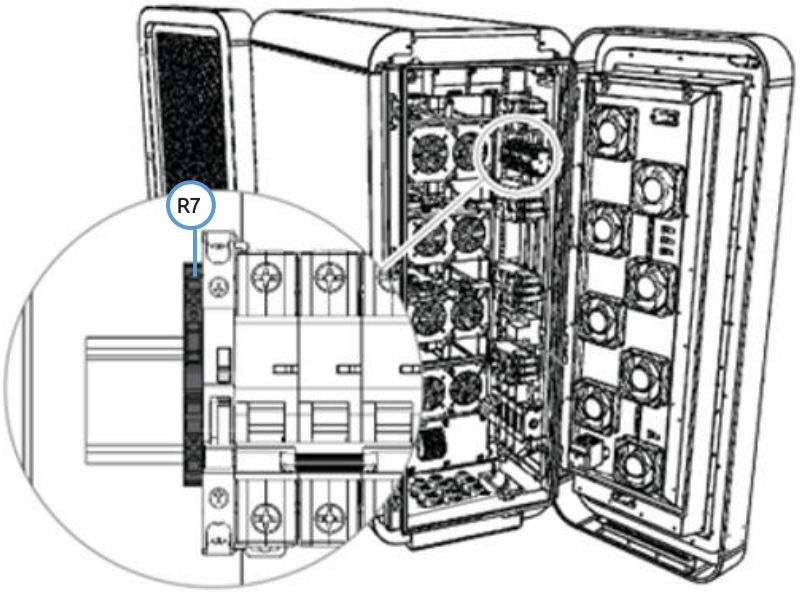
  Power Unit I:
  - ✓ **PCB E3** - **Remove** the jumpers **P5** and **P6**

  Power Unit II:
  - ✓ **PCB E3** - **Remove** the jumpers **P5** and **P6** and **set** the switch **SW2** to position **"2"**
  - ✓ **Terminal Block R7** - **Remove R7** and **apply** the **new resistor coding** (supplied by i-charging – 160 Ω) **marked** with **"PU II"**

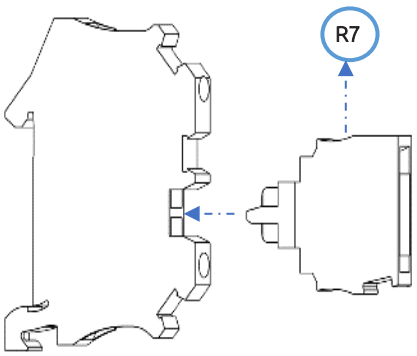
  Power Unit III:
  - ✓ **PCB E3** - **Set** the switch **SW2** to position **"3"**
  - ✓ **Terminal Block R7** - **Remove R7** and **apply** the **new resistor coding** (supplied by i-charging – 220 Ω) **marked** with **"PU III"**





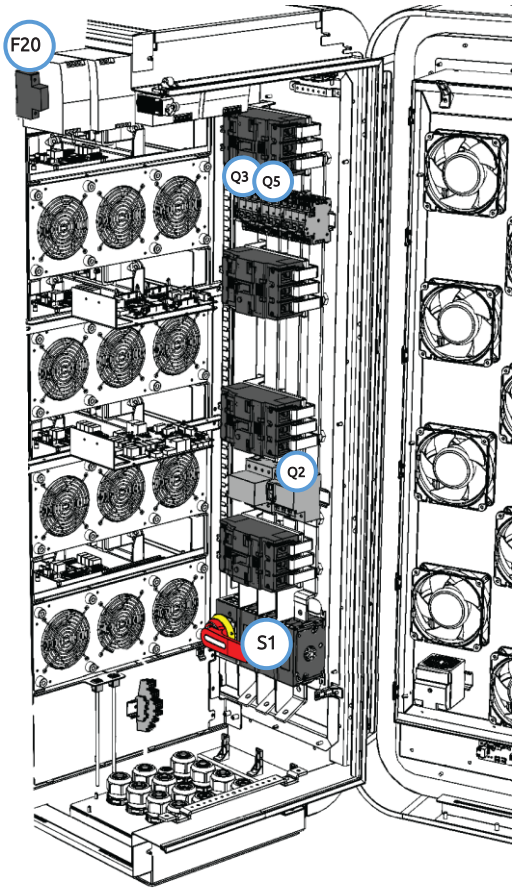


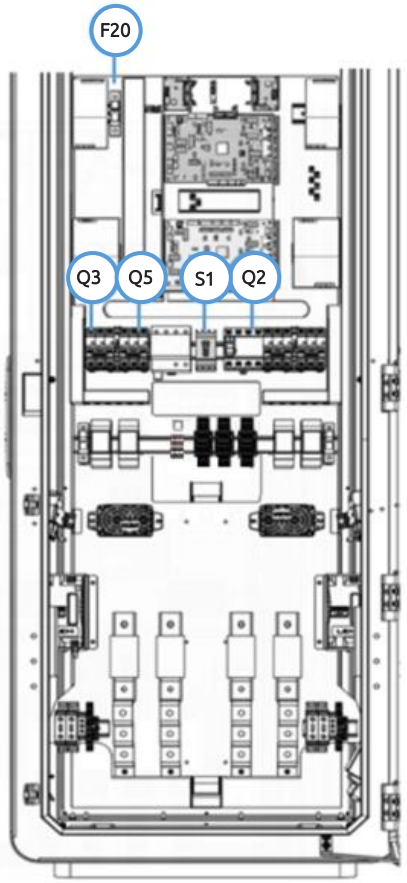
Plugging resistor coding R7



PLEASE NOTE!

To avoid water condensation inside the power Unit cabinet and the blueberry PLUS - User Unit, the switch disconnector **S1**, the residual current device **Q2** and the circuit breakers **Q3** (electronics), **Q5** (climate system) shall be left **switched on** in both equipment, allowing the heating resistances to turn on if necessary. See the image below to check where are located these components inside the cabinets. **Make sure that fuse F20 is opened in both equipment**.





7. COMMISSIONING

7.1. Installation Validation

Before starting up blueberry charging station:

- Must be done the following inspections:

#	TOPIC:	OK / NOK
1.	Site complying with clearance conditions and safety requirements	
2.	Absence of physical and structural damage	
3.	Charger ground fixation and leveling complies with manual requirements	
4.	Locking system is closing adequately	
5.	Upstream protection rating in Low voltage distribution board is according with the manual (refer chapter 5.3)	

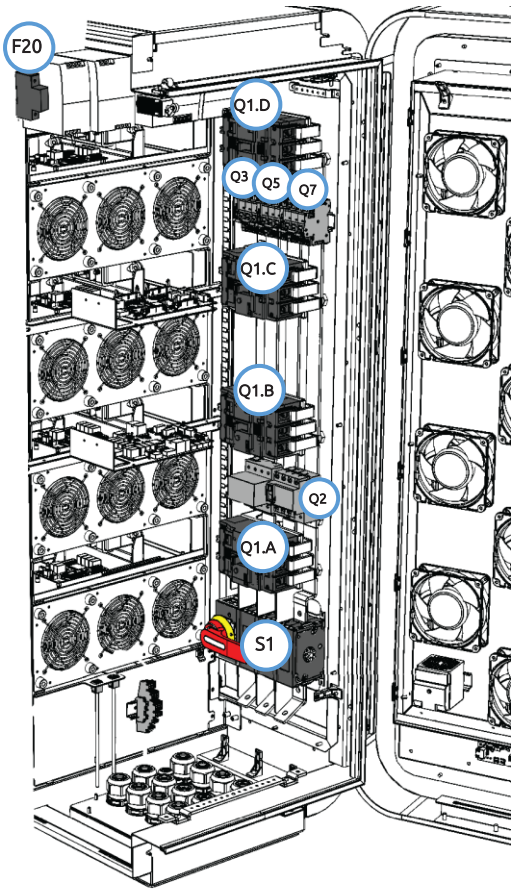
- Must be done the following measurements:

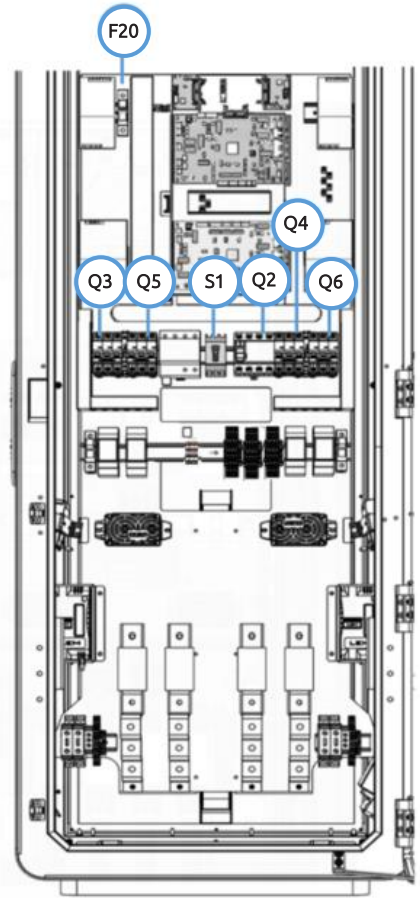
#	TOPIC:
6.	Confirm AC voltage between phases and phases and ground. The voltage must be according to the local grid and within blueberry charger range (refer chapter 3.1)
7.	Confirm DC Power Interconnections (refer chapter 5.4)
8.	Confirm communications interconnections (refer chapter 5.4)

7.2. Start Up

The start-up of the blueberry PLUS charging station shall begin by **switching on** the circuit breakers **Q1.A**, **Q1.B**, **Q1.C**, **Q1.D** (power circuit - according to the number of power modules), circuit breaker **Q7** and the fuse **F20** in the **power Unit**. In the **blueberry PLUS - User Unit**, the circuit breakers **Q4** (HMI), **Q6** (cable retractor) and the fuse **F20** must also be **switched on**.

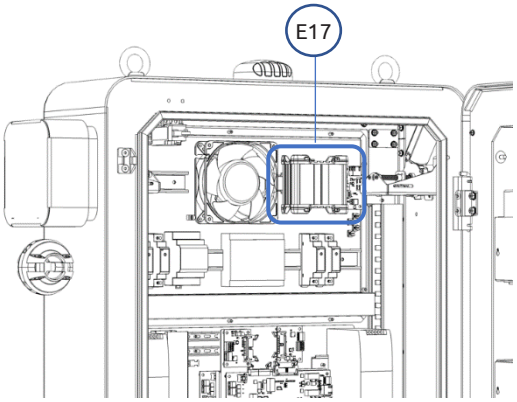
Please make sure that the switch disconnector S1, the residual current device Q2 and the circuit breakers Q3, Q5 are already switched ON, as stated in chapter 6.





The next step of commissioning is the **configuration** of the charger on the maintenance tool which can be accessed by one of two ways described in the **Service Manual**.

For that, check below the router position on blueberry PLUS – User Unit:



For the **user guide** please refer to **blueberry User Manual document**.