DC Wallbox 25kW

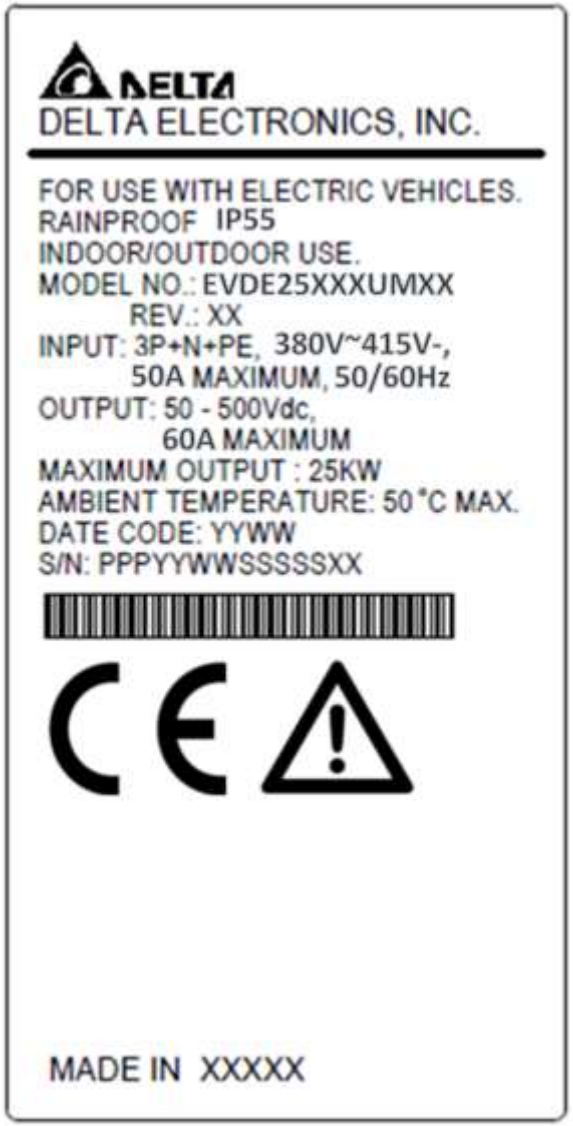
Installation Guide-v2.3

Delta Electronics, B.V.

Outline

1. Specification
2. Tools required
3. Preparation
4. Installation overview
5. Lessons and learned

Specification



A product sticker with the specific Delta product identification number is located on the right side of the DC Wallbox. Before installing, identify the type of utility service connection available on site.

EVDE 25 X X X UM__ → CUSTOMERIZARION

- **25kW**
- **D:** 380VAC – 415VAC, Three Phase, IP55, 50Hz (L1, L2, L3, N, PE)
- **E:** 200 – 230VAC, Three Phase, IP55, 50Hz (L1, L2, L3, PE)
- **Cable length: 4m(standard) or 7m(Option)**
- **E: Single connector**
- **D: Dual connector**

Specification

EVDE (EU model)

Model	EVDX25XXDXX	EVDX25XXEXX
Input rating	380~415 Vac 50 Hz	200~230 Vac 50 Hz
Current	50 A max. Input cabling rating 60A (20% margin)	100A max. Input cabling rating 110A (10% margin)
Number of Phase / Wire	3-phase / L1, L2, L3, N, PE	3-phase / L1, L2, L3, PE
Upstream breaker*	type C or D breaker, rating current 50A	type C or D breaker, rating current 100A
Upstream RCD*	type A, 4-pole, 30mA	type A, 3-pole, 30mA

***DEPENDS ON LOCAL REGULATIONS REQUIREMENTS**

Specification

Power Output	EU-single EU-dual	#1 #2	IEC CCS DC Level 2, 50-500 Vdc, 60A max., 25kW max. CHAdeMO, 50-500 Vdc, 60A max., 25 kW max.
Environmental	Operating T		-30 ℃ to +50 ℃
	Humidity		< 95% relative humidity, non-condensing
	Altitude		Up to 2000 m
Mechanical	Ingress Protection		IP55/ Type 3R
	Enclosure Protection		IK08
	Cooling		Forced air
	Charging Cable Length		4 m (Standard) 7 m (Optional)
	Dimension (W x H x D) / Weight		680 x 430 x 230 mm, excluding plug and cable / 104 lbs (47kg), excluding plug and cable
Protection	Protection		Over current, Under voltage, Over voltage, Surge protection, Short circuit, Over temperature, Ground fault

Specification

- **Weight information**

	Net	Gross (including wooden crate and pallet)
4m, single connector (EVDE25E4DUM EVDE25E4EUM)	74.75kg	94kg
7m, single connector (EVDE25E7DUM)	90kg	111kg
4m, dual connector (EVDE25D4DUM)	81kg	102kg

Tools Required

Warning! Please DO NOT use any tools outside the scope of recommendation list below to prevent breaking the device

Warning! Please DO NOT use cable gland with lower IP-rating to prevent water intrusion

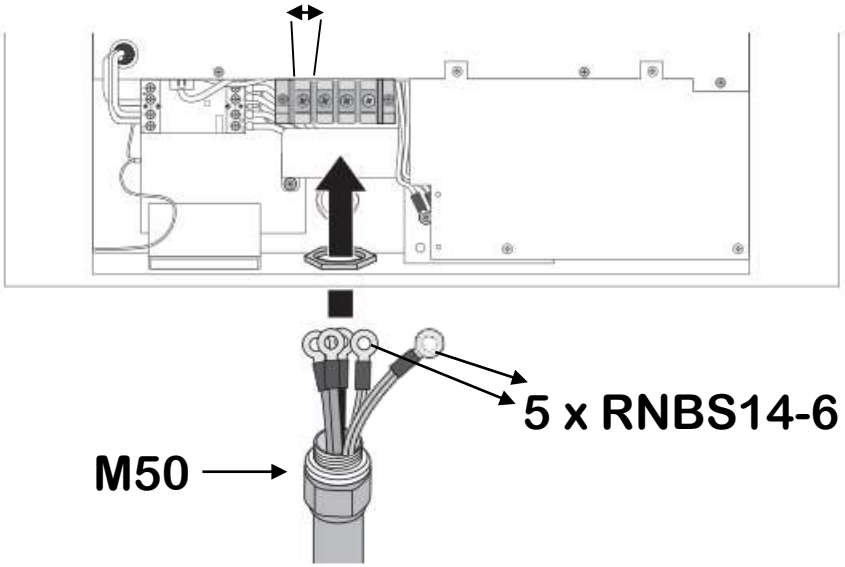
The recommended tools are:

- (1x) Voltmeter or digital multi-meter
- (1x) TH15 (with central hole) and T25 torx screwdriver
- (1x) No.6, 8 Flathead screwdriver
- (1x) No.2, 3 Philips screw driver
- (1x) M50 cable gland and wrench (for main power wires)
- (1x) M25 cable gland and wrench (for Ethernet)
  EVDE25XXDUM (5x) Ring terminal RNBS14-6 (for 10-16mm^2 L1/L2/L3/N/PE wire)
  EVDE25XXEUM (3x) Ring terminal RNBS38-6 (for 38mm^2 L1/L2/L3 wire)
- and (1x) Ring terminal RNBS14-6 (for 10mm^2 Copper PE wire)
- (1x) Spirit level
- (1x) Hammer
- (1x) Concrete drilling machine
- (1x) Wire cutters/ strippers

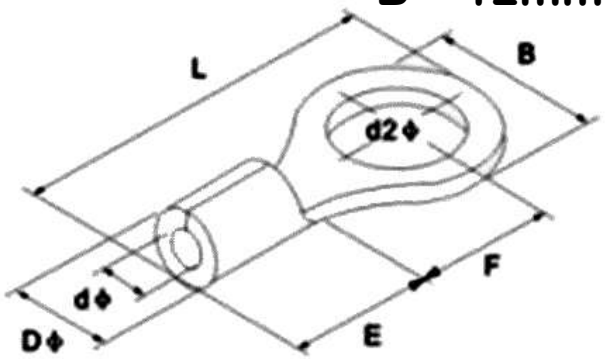
Ring terminals for EVDE25XXDUM

- 5x Ring terminals (recommend RNBS14-6) which the outer diameter is less than 12mm and suitable for 10-16mm^2 CSA cable are usable.
- Ring terminals are not including in the accessory, need to be sourced by installer

Cable lug size is 13mm



B = 12mm

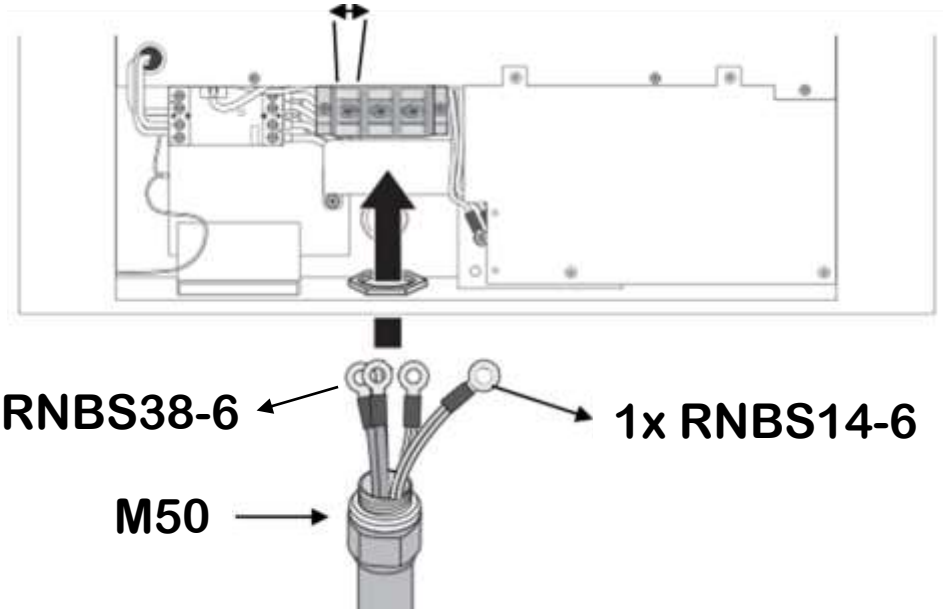


"d" can fit 10-16mm^2 cable in

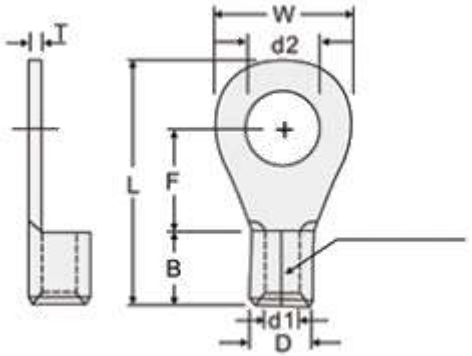
Ring terminals for EVDE25XXEUM

- For L1/L2/L3, 3x Ring terminals (recommend RNBS38-6) which the outer diameter is less than 18mm and suitable for 38mm^2 CSA cable are usable.
- For PE, 1x Ring terminal (recommend RNBS14-6) which the outer diameter is less than 12mm and suitable for 10-16mm^2 CSA cable are usable.
- Ring terminals are not including in the accessory, need to be sourced by installer

Cable lug size is 18mm



W = 15.3mm



RNBS38-6

Preparation (Unbox)

1. Release the screws on the crate (two sides) with a No. 8 socket wrench.

2. Open the cover of the plywood crate by two person.

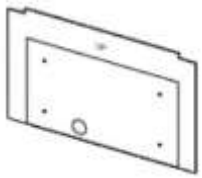
Heavy loading! Operate with two person to prevent injury and instability

3. Remove top foam, open plastic bag and take out the unit.

Carefully place the unit and the charging plug on the ground or a flat surface at this stage.

Preparation (check accessory)

1 x Mounting bracket

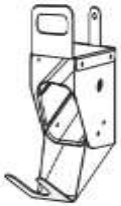


1 x Mounting template

2 x Delta RFID cards

2 x keys for key switch

1 x User manual



1 x CCS2 plug holder

1 x CHAdeMO plug holder
(CCS2 + CHAdeMO)

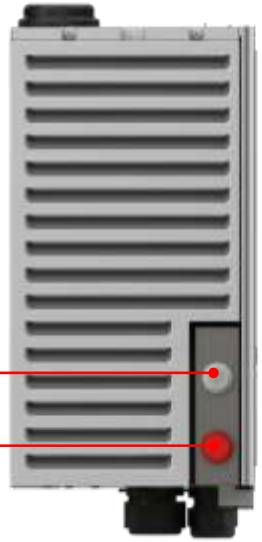
2 x Bracket screws

1 x Ground screw

6 x Expansion bolt (CCS2 only)

8 x Expansion bolt (CCS2 + CHAdeMO)

Preparation (dimension)



Key Switch

Emergency button

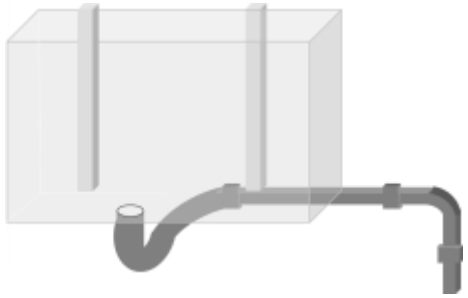
430mm

680mm

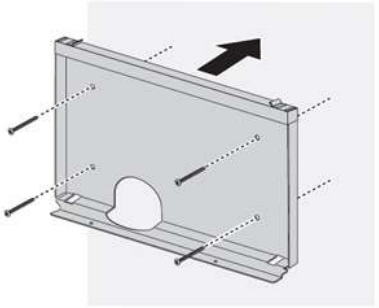
230mm

Installation Overview

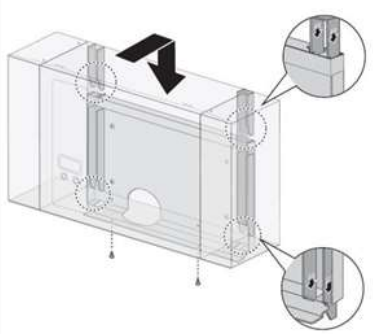
0. Power cabling plan



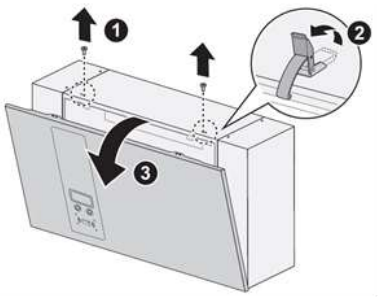
1. Install bracket



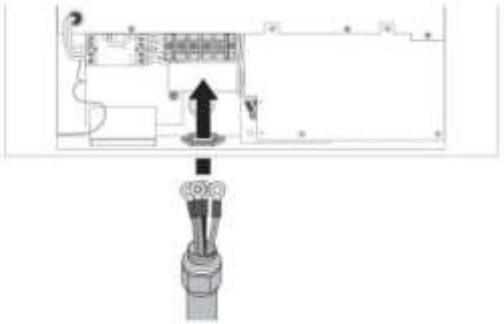
2. Mount on wall



3. Open front cover



4. Wiring



5. Internet connection (Optional)

6. Secure cover and fix the plug holder

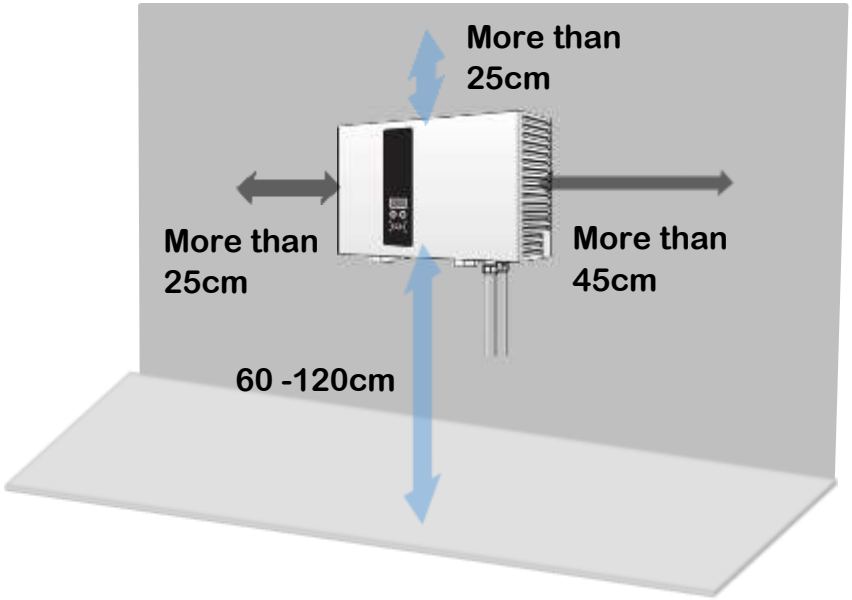
7. Power Up

8. Confirm a successful installation

9. Go through the checklist

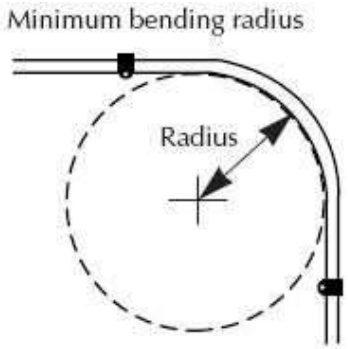
Step 0: Power cabling plan

- Setup a plan to choose a proper position for installation of the DCWB



- Make your plan based-on
  - Local regulation
  - Avoid causing the connector bearing out-of-design tension
  - Avoid causing difficulty for future maintenance

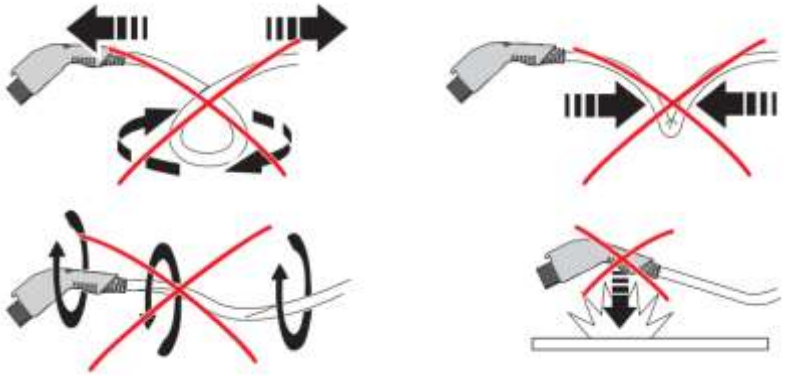
Step 0: Power cabling plan



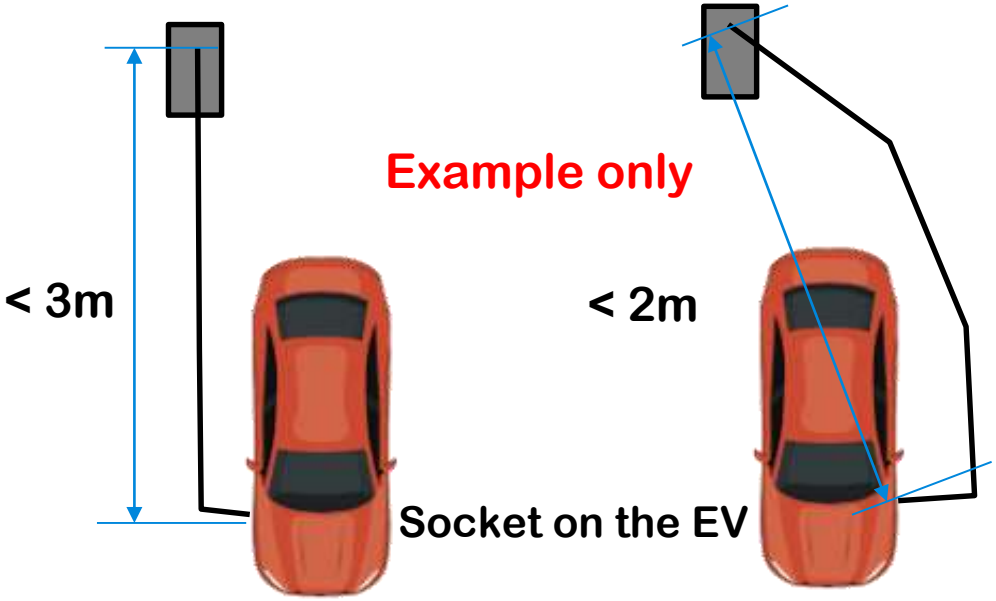
Warning!

- The bending of the cable must be less than 184mm radius
- An example for the straight distance between EV socket and Cable out position could be less than:
  - Same side:3 meters
  - opposite side: 2 meters
- Real installation plan should depend on the site condition and EV size to prevent over stretch the cable.

Minimum bending radius	184 mm



https://www.phoenixcontact.com/



The length of Audi etron is: 4,901mm

R should be larger 18.4cm

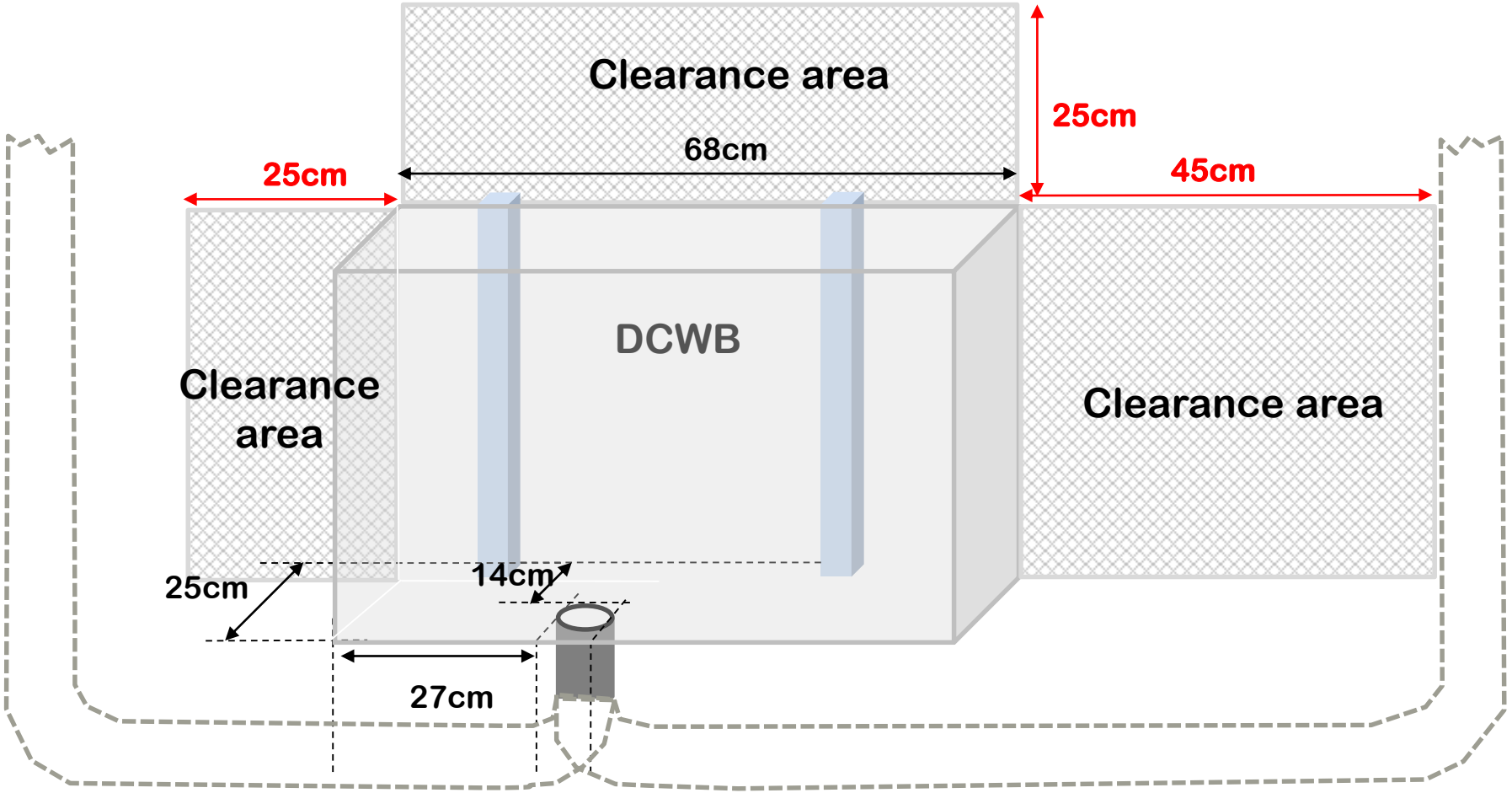
DCWB

DCWB

Step 0: Power cable wiring plan

Use bottom hole feeding power cable

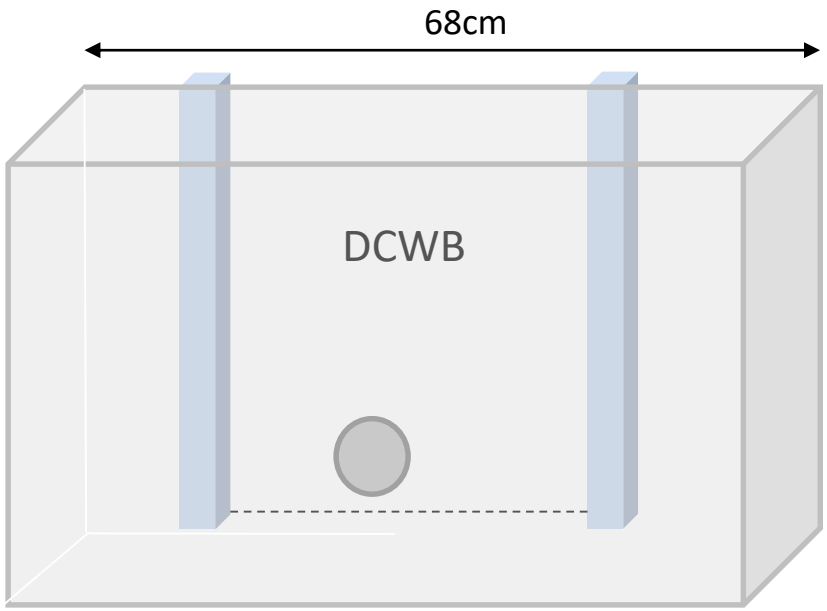
Warning!
DO NOT install any thing inside clearance area, to prevent difficulties during future maintenance work

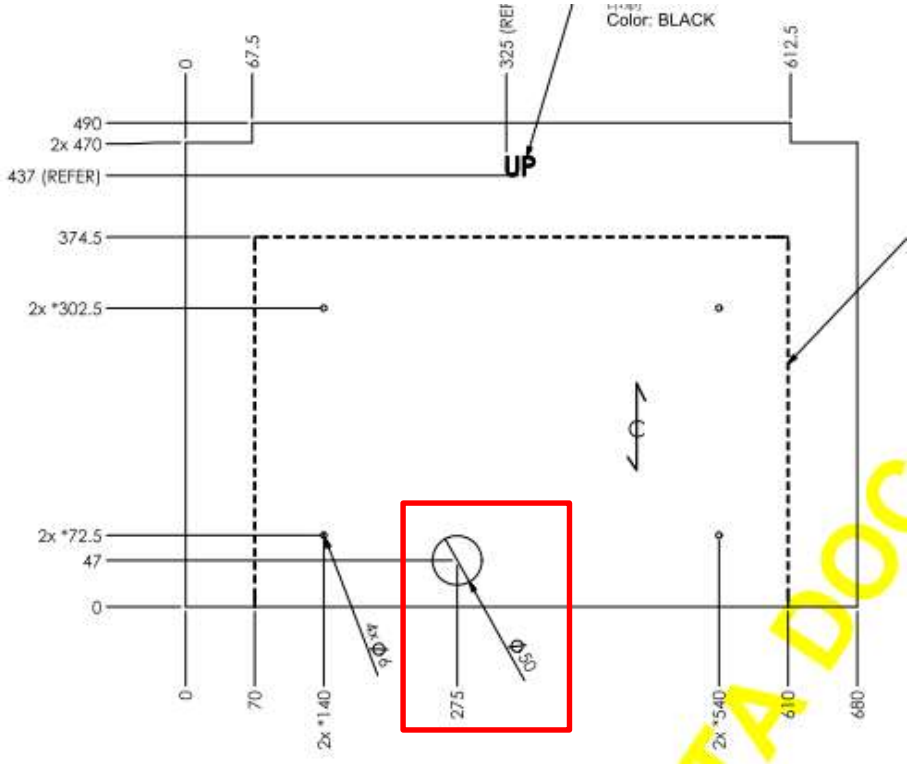


Step 0: Power cable wiring plan

Use rear hole feeding power cable

Warning, please use IP55 cable gland to ensure water proof protection

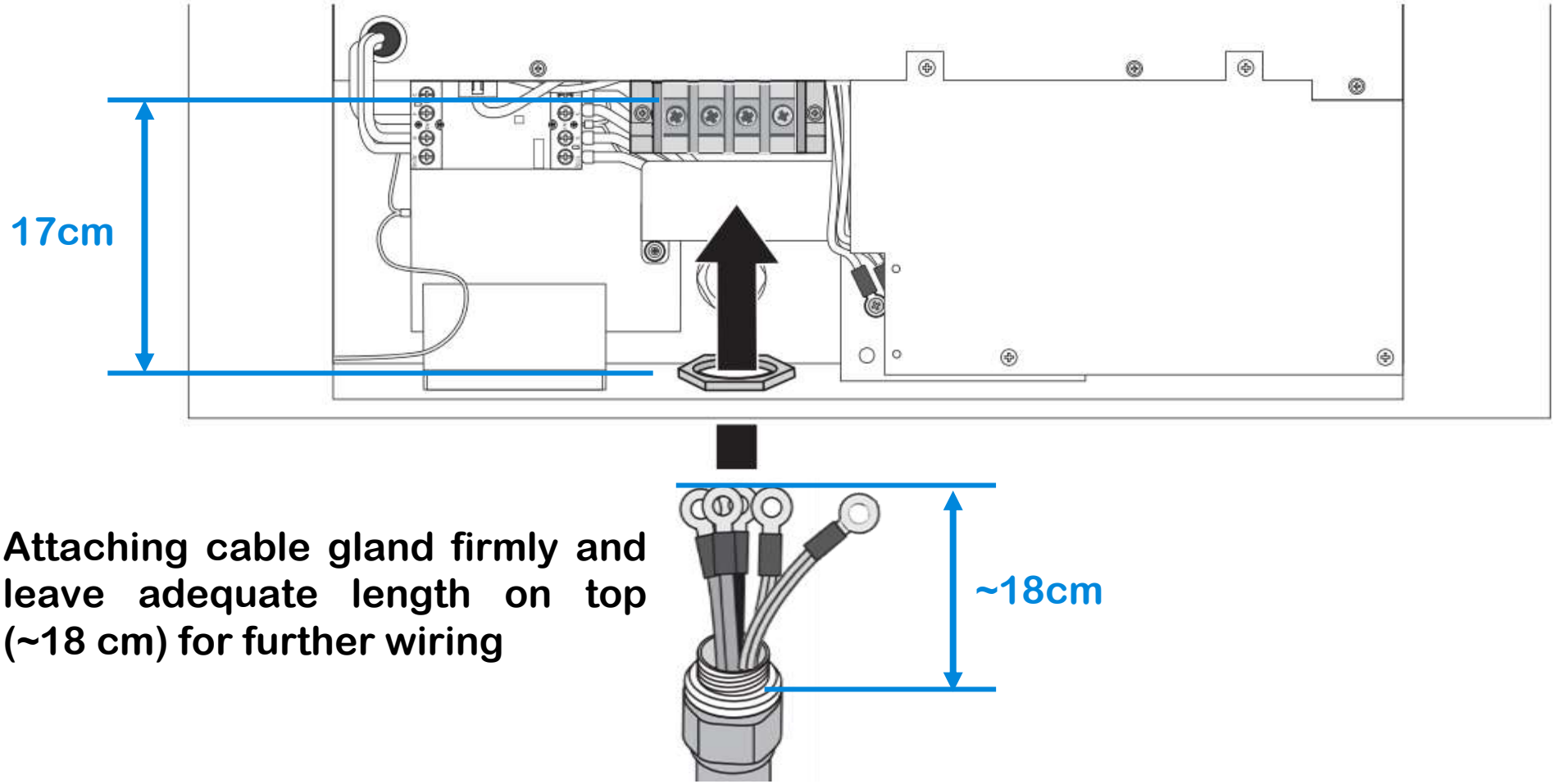




Step 0: Attaching cable gland (IP55,M50)

Warning! To prevent unstable fixation, preserve proper length of the power cable to fit the 17 cm distance between bottom to the top input terminal.

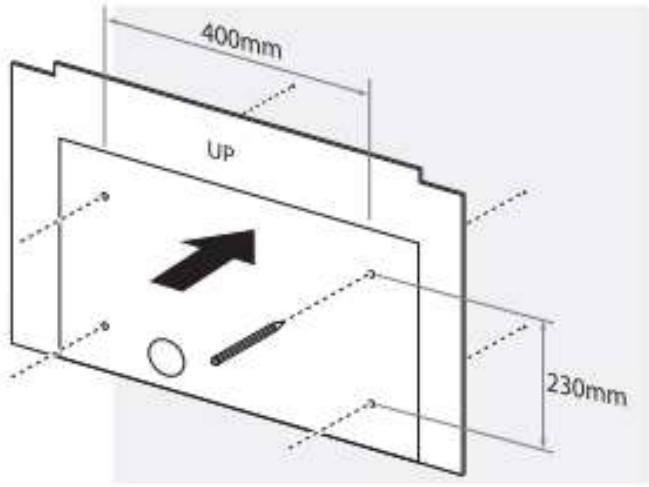
Warning! Please DO NOT use cable gland with lower IP-rating to prevent water intrusion



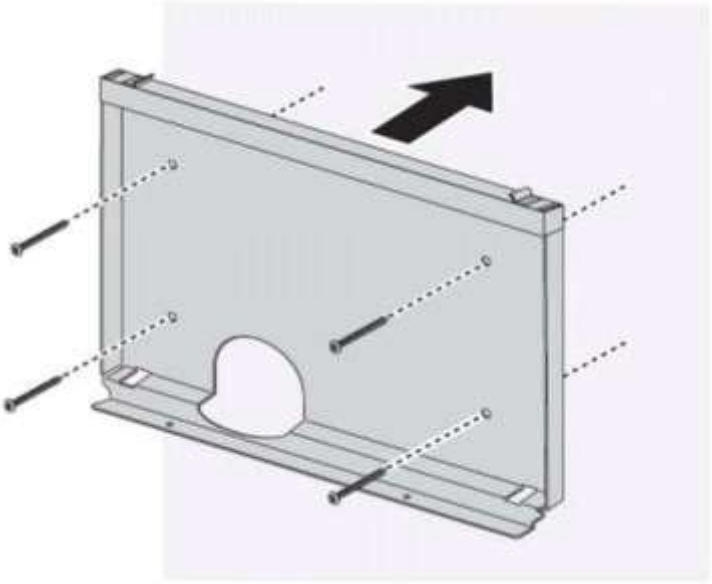
Attaching cable gland firmly and leave adequate length on top (~18 cm) for further wiring

Step 1: Install bracket

Warning! the capability of the wall must sustain over 100kg with stable supporting force

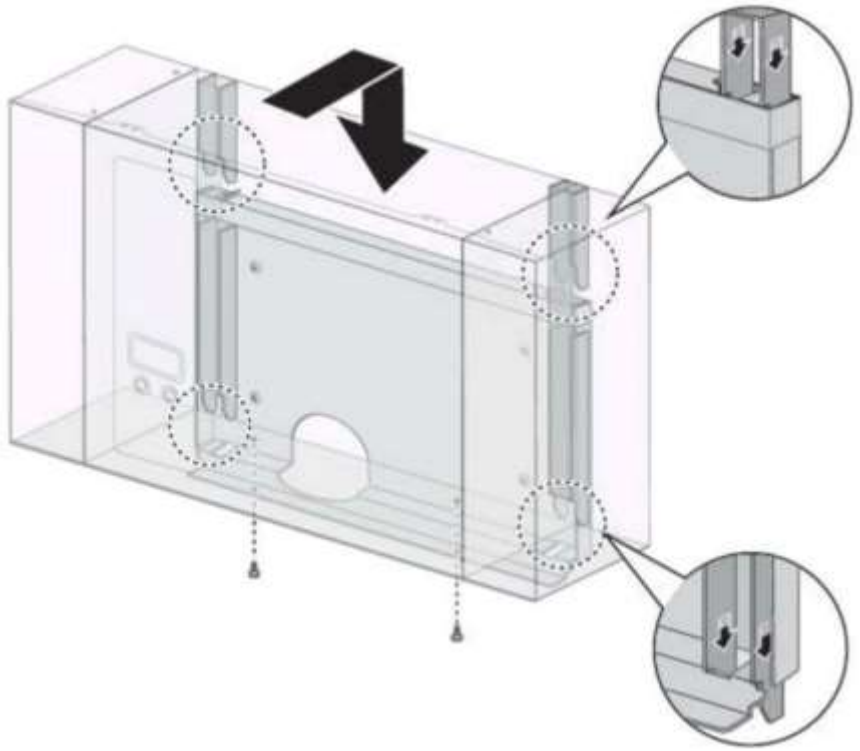


- Use the template to mark the drilling positions
- Drilling holes on the wall
- Use expansion bolts to fix the bracket



Steps 2: Mount on wall

- Place unit onto bracket.
- Align the back chassis of unit with the corresponding slot on the bracket. Slowly slide down the unit until it sits firmly on the bracket.
- Fasten two screws from the bottom.

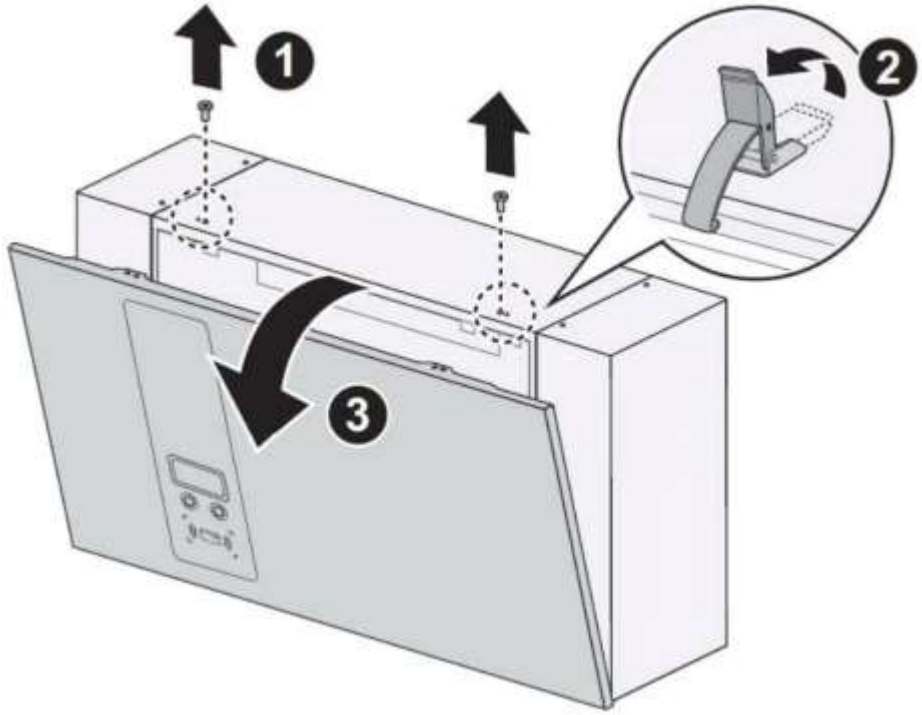


Warning! Fixation screw missing could lead free to move the cabinet, and potentially cause power cable broken.

Steps 3: Open front cover

TH15 bit head
(with central hole)

- Release two screws on top (TH15)
- Release the latches to open front cover.
- Put down front cover gently.



Steps 4: Wiring

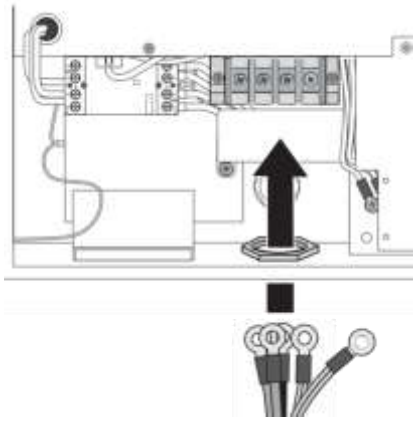
- For TN or TT input grid distribution:
  - ❖ Ground fault protection is not possible unless the neutral line is connected to earth. Always connect the neutral line at the service panel to earth.
  - ❖ An IT input grid distribution does not have this ground connection.

THE PRODUCT MUST BE CONNECTED TO A GROUNDED, METAL, PERMANENT WIRING SYSTEM; OR AN EQUIPMENT GROUNDING CONDUCTOR MUST BE RUN WITH THE CIRCUIT CONDUCTORS AND CONNECTED TO THE EQUIPMENT GROUNDING TERMINAL OR LEAD ON THE PRODUCT.

Steps 4: Wiring

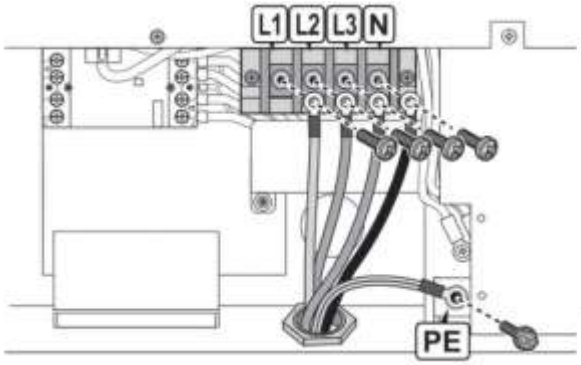
To prevent electric shock, DO NOT connect power cable when it is live!

- Passing the power cable through the bottom hole and secure the cable gland

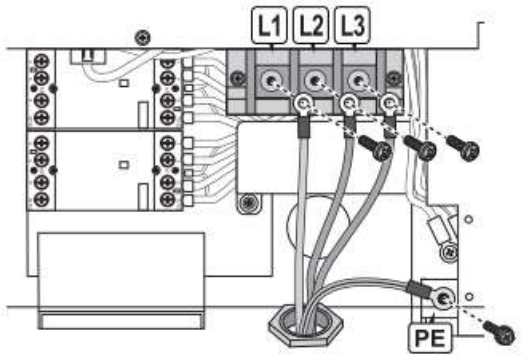


To prevent instability fixation and bad contact, please follow suggested torque

- Wiring cable of PE with 20 kg-cm Torque force
- Wiring cable of L1/L2/L3/N with 33 kg-cm Torque force



EVDE25XXDUM

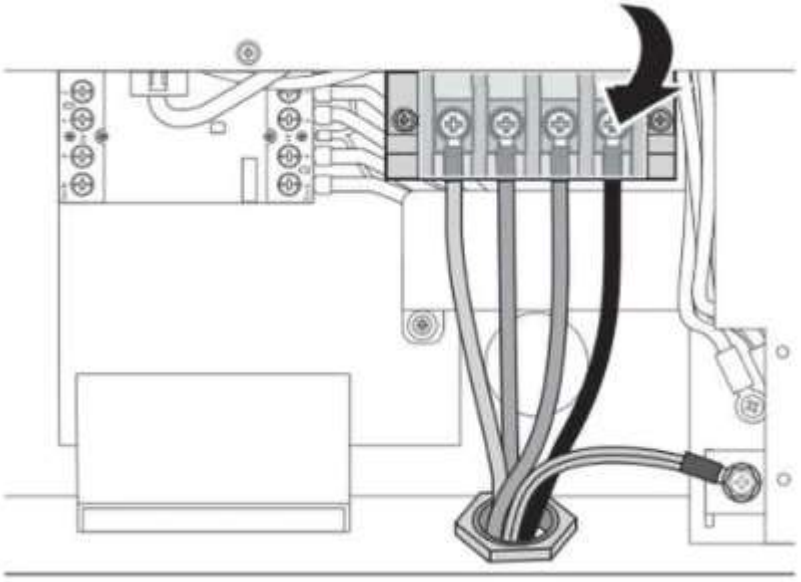


EVDE25XXEUM

Steps 4: Wiring

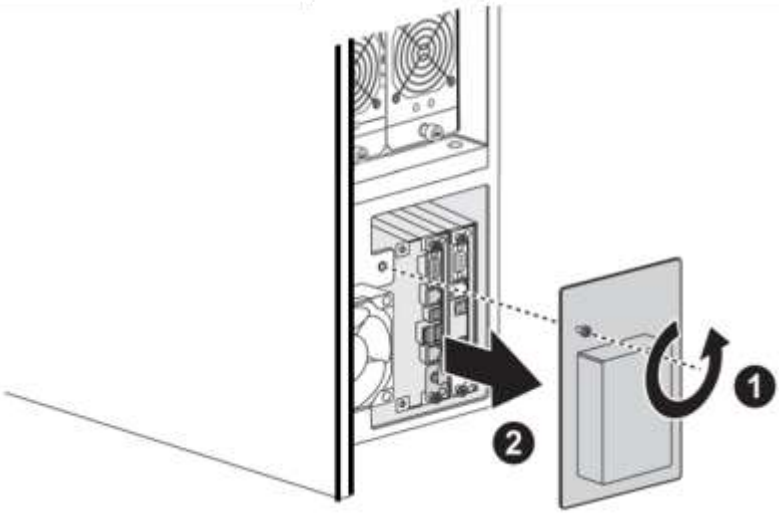
- Close plastic protection over

To prevent electrical hazard, please do closing the cover



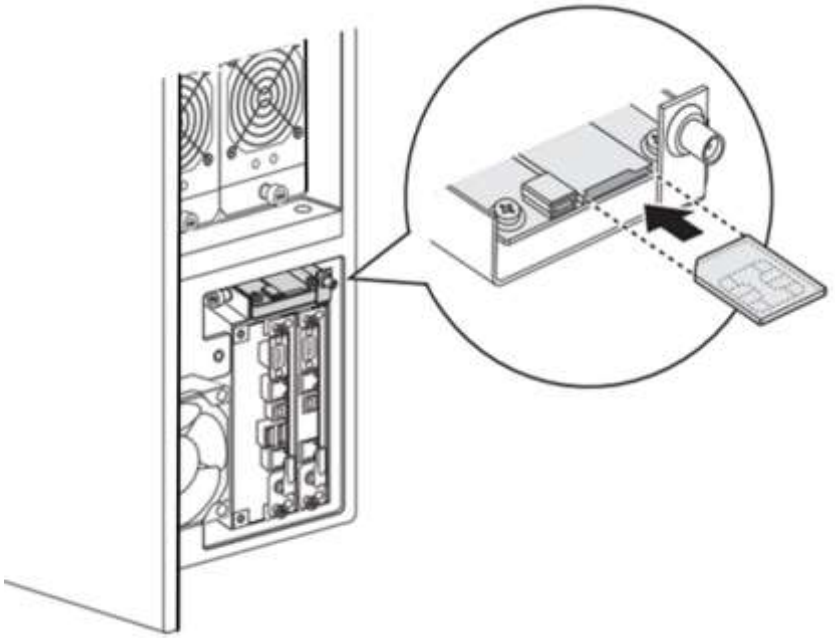
Step 5-1: Internet connection via sim card (Optional)

- Release the two screws (T25 torx screw driver) on top.
- Release the two screws (T25 torx screw driver) on bottom and pull out the latch.
- Open and remove the filter cover.
- Remove protection cover



Step 5-1: Internet connection via sim card (Optional)

Insert the Micro SIM card into 3G modem.



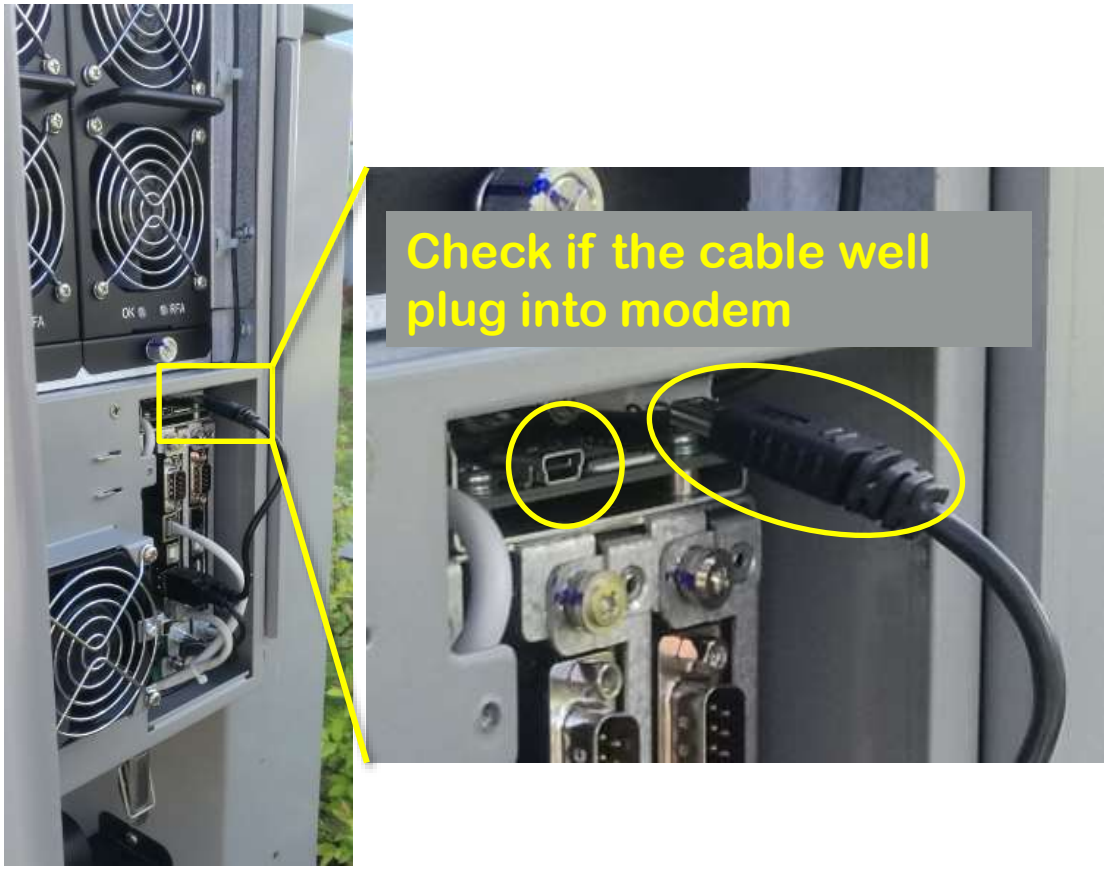
It only supports

- 2G GSM
- 3G WCDMA

SIM card PIN free

Step 5-1: Internet connection via sim card (Optional)

Do check 3G modem cabling is well plugged to the socket before the cover is restoring position and locked

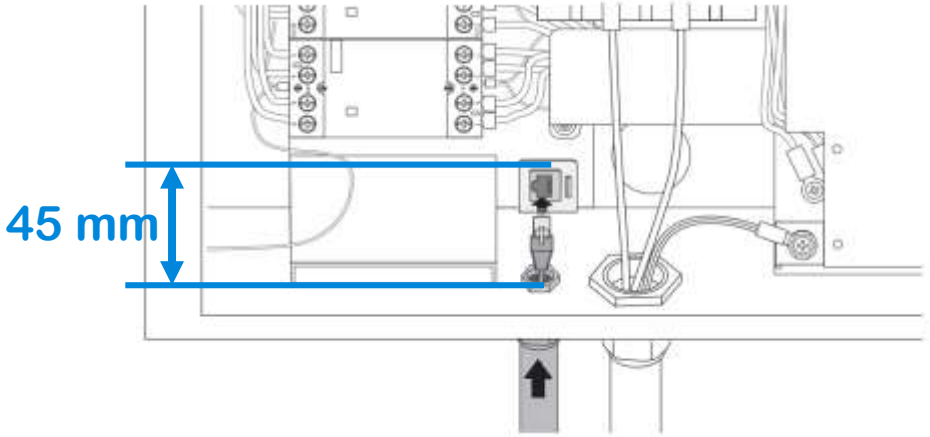


Step 5-2: Internet connection via RJ45 (Optional)

Warning! To prevent unstable fixation, preserve proper length of the RJ45 cable to fit the 45 mm distance between bottom to the top RJ45 socket.

Warning! Please DO NOT use cable gland with lower IP-rating to prevent water intrusion

- Through front cabinet, insert the ethernet cable from bottom M25 hole with IP55 cable gland

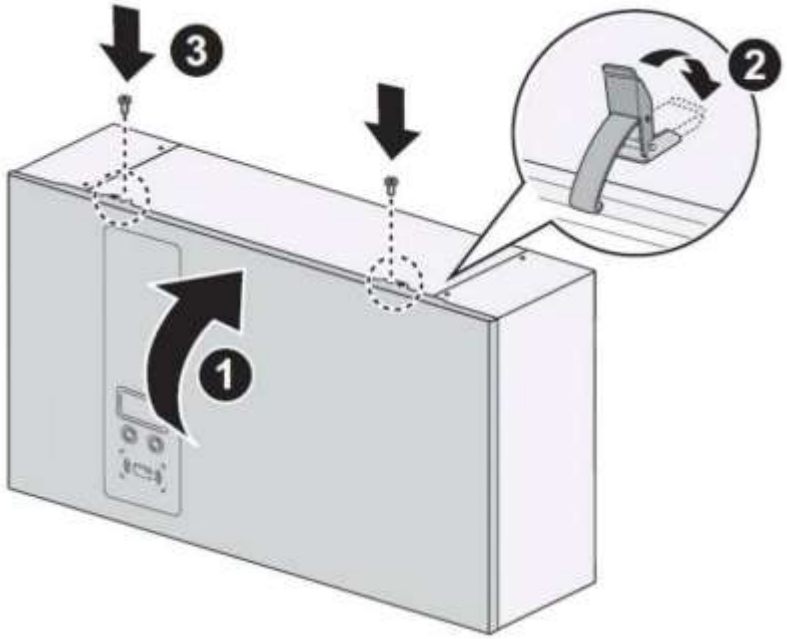


Warning! The other ethernet port is dummy and cannot offer communication function

Step 6: Secure cover and fix the plug holder

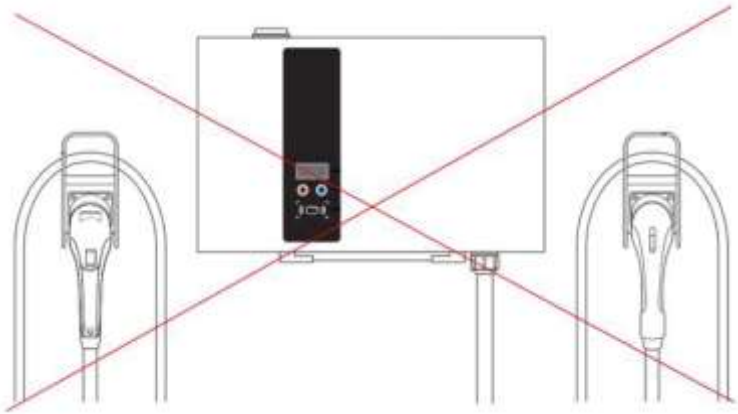
Secure side cover

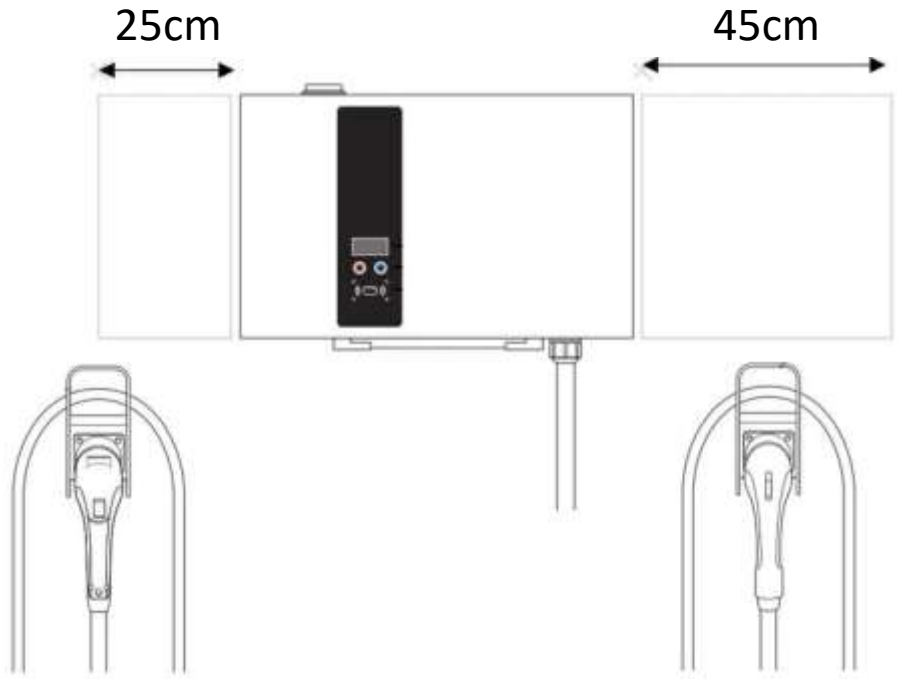
Secure front cover



Step 6: Secure cover and fix the plug holder

- Mount charging plug holder onto the wall at proper distance to DC Wallbox
- Place charging cable and plug on the holder properly.





Step 7: Power up

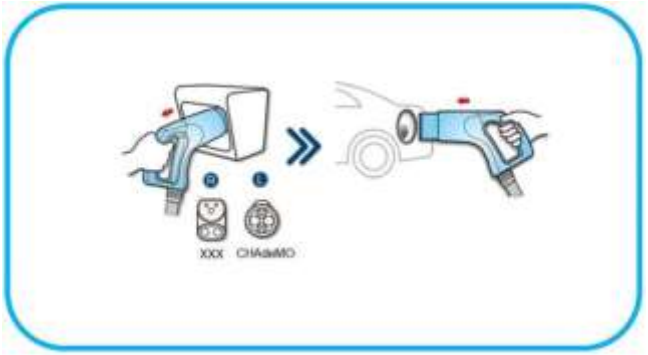
Key
Switch

Switch power on and turn the key to initialize DC Wallbox when all steps are completed.

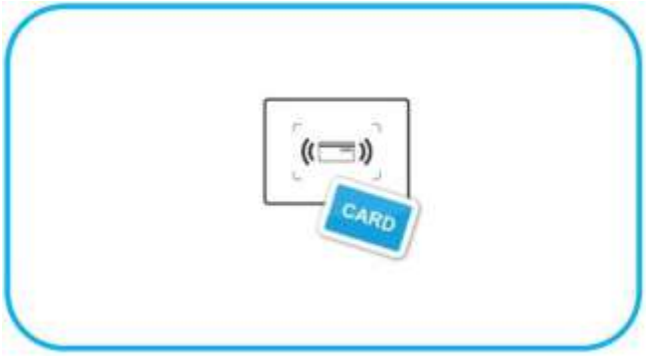
Step 8: Confirm a successful installation

Attempt to charge the car to ensure the DC Wallbox is install and operate correctly.

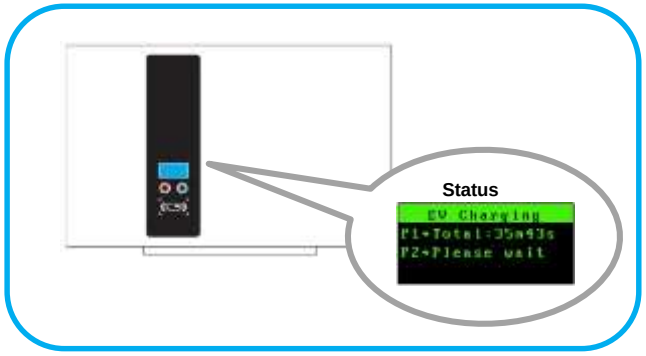
1. Choose a compatible plug (CCS or CHAdeMO)



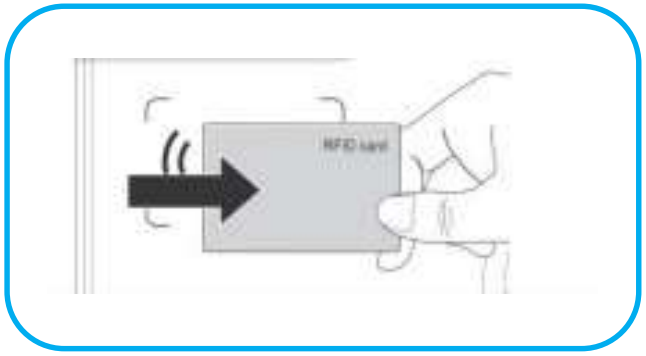
2. Connect the plug to EV



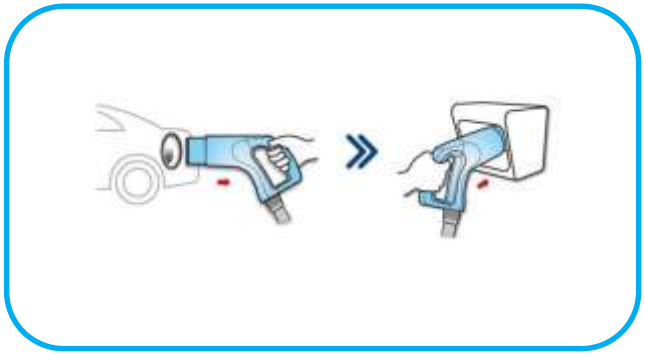
3. Swipe RFID



4. Real-time charging status shows on the display

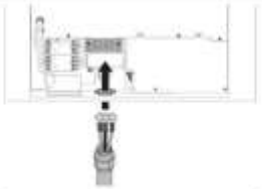


5. Swipe RFID card to stop



6. Return plug

Step 10: Go through the checklist

Installation environment and conditions check list	
Check the left and right side space of the installation position are cleared and has left at least 25cm at left-hand side, and 45cm at right-side clearance space without any objects. 	☐
Check if the supporting wall or structure has the capability to solidly fix and support 80kg object.	☐
Check the installation position is not blocking any walkway or doorway.	☐
Check the installation position is making DC wallbox being bumped by moving object (ex: door).	☐
Conduct a visual inspection to the cabinet, cables, guns and LCM to make sure these are not damaged	☐
Mounting bracket is secure	☐
Two screws at bottom of DC Wallbox are secured	☐
The AC power cables are feed from the bottom hold with a conduit. 	☐
Connect proper AC cables using 33 kg-cm torque	☐
Transparent plastic protection lid of AC terminal is installed 	☐
Connect proper PE cables using 20 kg-cm torque	☐
Connect LAN cable (if applicable)	☐
Insert micro SIM card (3G WCDMA) (if applicable)	☐
Secure front cover, left and right cover and conduit(Cable gland) to avoid liquid leakage	☐
Installed and secure connector holder in a proper position	☐
Place charging cable and connector on the connector holder properly	☐
Check the cabinet again to see if there are any visible scratches occurs during installation process	☐
Check if two fixation screws at the bracket bottoms being screwed 	☐
Multi-function button could be operated	☐
Check USB port is functional by successfully downloading a log file	☐
Power off and on (15 second between off and on) DC wallbox by key switch	☐
Press "Emergency Stop" button and LCM shows status code 00400A	☐
Check RFID function if applicable	☐

Picture of the installation:

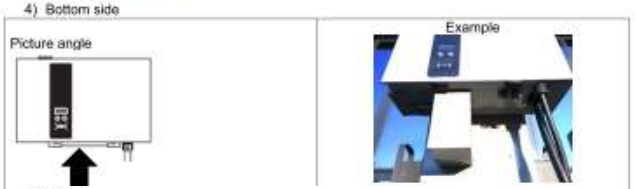
Please provide picture of the installation as follow: In digital format with minimum resolution: 2500 x 3000 pixels

1) Serial number plus large view of the installation

2) Right side cover

3) Left side cover

4) Bottom side



5) Front

6) In case of installation with Delta pedestal mount:

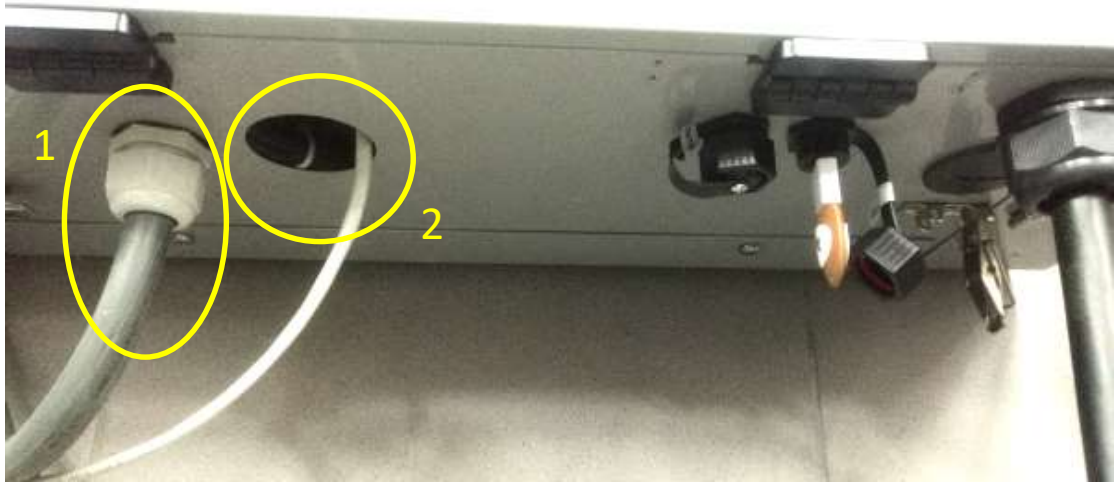
Lessons learned

Proper location and installation

Real cases of non-proper cabling

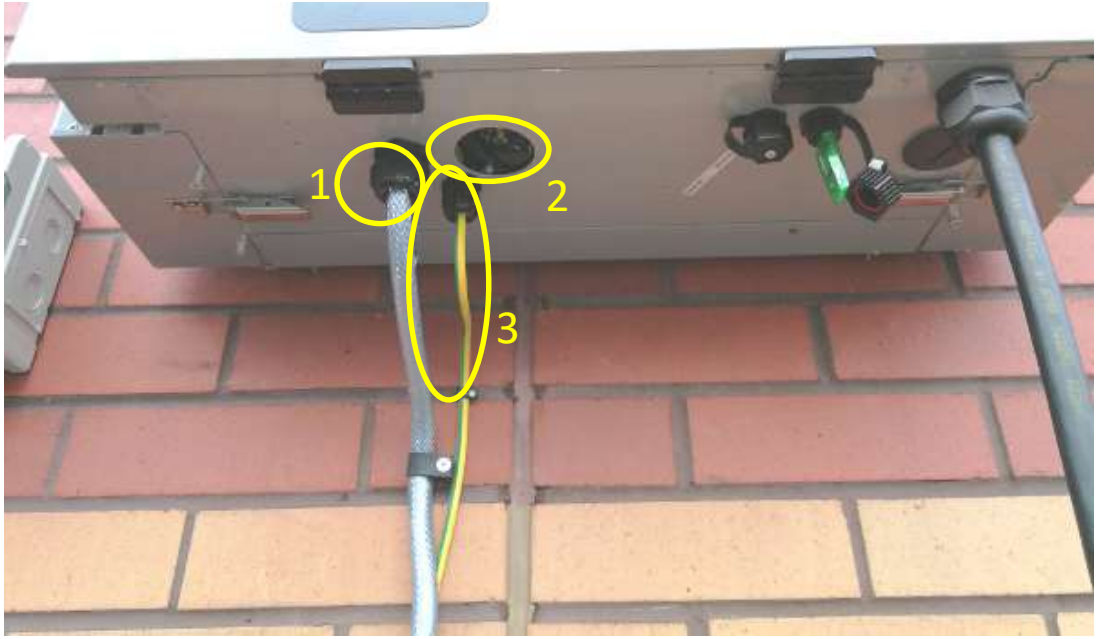
Root cause: Power line cabling and wallbox installation were done

- **By different group of technicians**
- **In different time**



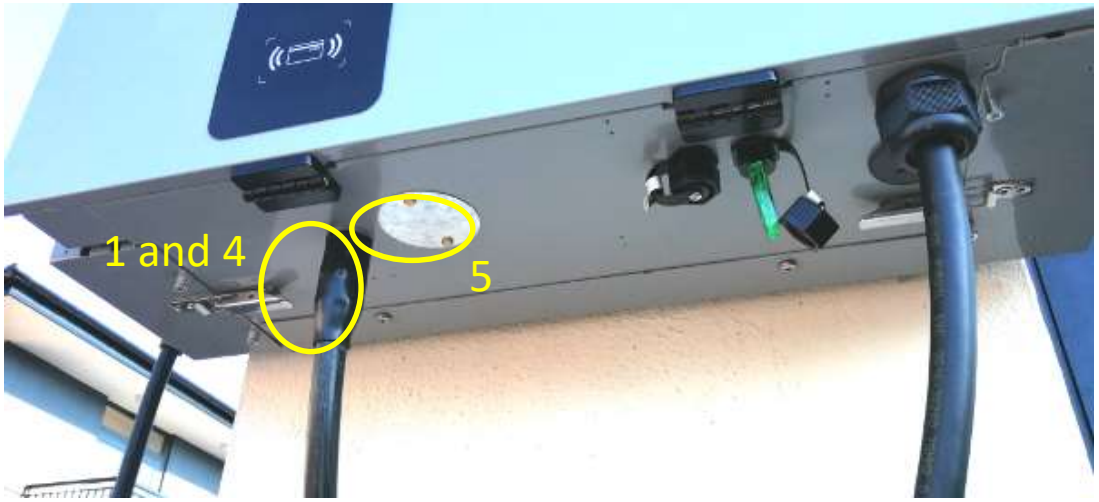
1. **Using wrong open hole for power cabling**
2. **The original hole is using for earth cable, but without cable gland**

Real cases of non-proper cabling



3. Drill an extra hole for PE

DO NOT DRILL OR DAMAGE THE ENCLOSURE



4 and 5. Wrong cable glands

Risks of non-proper cabling

Issues in using Ethernet hole for power cable:

L1/L2/L3/N PE

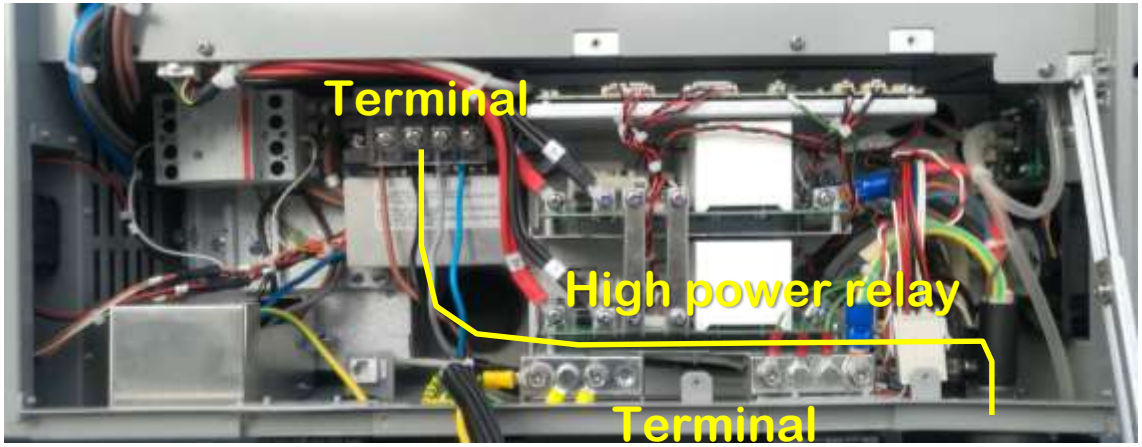
Risks:

- Five 10-16mm^2 cables will not fit in to M25 hole
- Using cable smaller than 10mm^2 will not be safe
- No cover of original hole will loss waterproof protection
- Drilling extra hole to accommodate PE cable could lead rust and break waterproof

Issues in using CHAdeMO plug hole for power cable:

Risks:

- Narrow space , passing high-power components and terminals could have safety risk.
- Two 90 degree turn will needed, could have safety risk.
- No cover of original hole will loss waterproof protection



Real cases of non-proper cabling

6. Extra pipes or tubes on left side

7. Devices or equipment / connector holder on both side

Real cases of non-proper cabling

8. Solid structure (pillar, wall) which cannot be moved on the both side

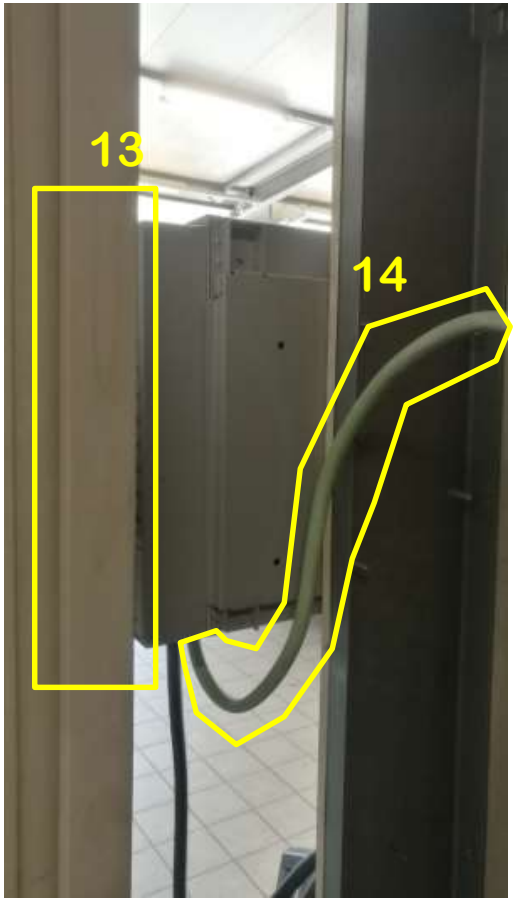
Real cases of non-proper cabling

9. Toolbox

10. Home plugs and emergency switch

11. On the floor

Real cases of non-proper cabling



12. On a piece of wall

13. Left side with a heavy cabinet

14. Power cable is not fixed

Real cases of non-proper cabling

15. Interference by other equipment (an air blower)

16. Fastened on a H bin

Real cases of non-proper cabling

17. Strange triangle corner

18. Near doorway

Risks of non-proper location

Issue: side covers being blocked (6,7,8,9,10,13)

Risks:

- Unable to do maintenance, replacement
  - Filters
  - Power module, Auxiliary power
  - Main control boards
  - 3G Modem
- Power de-rating (50° C)
- Not accessible for emergency button

Issue: non-proper location (11,12,14,15-18)

Risks:

- Unable fasten the power cable or connector holder
- Get force impact by door could damage internal components
- Too weak to support the wallbox
- Tripping hazard

Smarter. Greener. Together.

Thank you

To learn more about Delta, please visit www.deltaww.com.