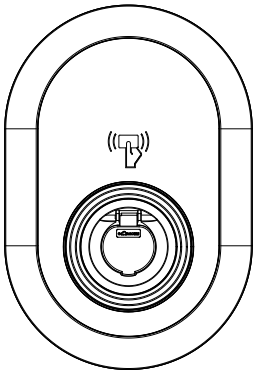
DEFENZO

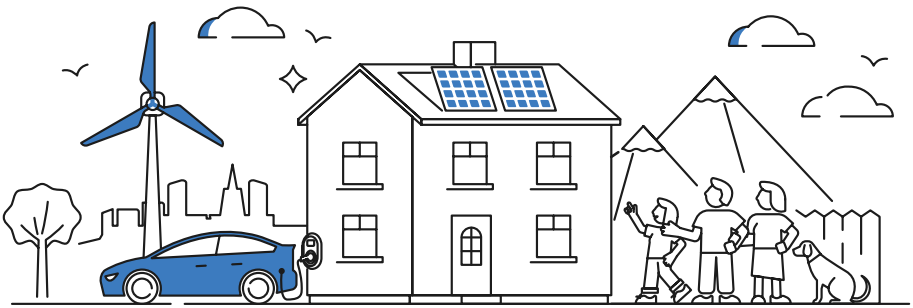
WALLBOX AC



CHARGING STATION

Defenzo Wallbox AC7/AC22

Installation Guide



CONTENTS

1 - SAFETY INFORMATION

CAUTION

RISK OF ELECTRIC SHOCK

CAUTION: ELECTRIC VEHICLE CHARGER DEVICE SHALL BE MOUNTED BY A LICENSED OR AN EXPERIENCED ELECTRICIAN AS PER ANY REGIONAL OR NATIONAL ELECTRIC REGULATIONS AND STANDARDS IN EFFECT.

CAUTION

AC mains connection and load planning of the electric vehicle charging device shall be reviewed and approved by authorities as specified by the regional or national electric regulations and standards in effect.
For multiple electric vehicle charger installations the load plan shall be established accordingly.
The manufacturer shall not be held liable directly or indirectly for any reason whatsoever in the event of damages and risks that are borne of errors due to AC mains supply connection or load planning.

IMPORTANT - Please read these instructions fully before installing or operating

1.1 - SAFETY WARNINGS

- Keep this manual in a safe place. These safety and operating instructions must be kept in a safe place for future reference.
- Check that the voltage marked on the rating label and do not use charging station without appropriate mains voltage.
- Do not continue to operate the unit if you are in any doubt about it working normally, or if it is damaged in any way - switch off the mains supply circuit breakers (MCB and RCCB). Consult your local dealer.
- The ambient temperature range should be between –35 °C and +55 °C without direct sunlight and at a relative humidity of between 5 % and 95 %. Use the charging station only within these specified operating conditions.
- The device location should be selected to avoid excessive heating of the charging station. High operating temperature caused by direct sunlight or heating sources, may cause reduction of charging current or temporary interruption of charging process.
- The charging station is intended for outdoor and indoor use. It can also be used in public places.
- To reduce the risk of fire, electric shock or product damage, do not expose this unit to severe rain, snow, electrical storm or other severe weathers. Moreover, the charging station shall not be exposed to spilled or splashed liquids.
- Do not touch end terminals, electric vehicle connector and other hazardous live parts of the charging station with sharp metallic objects.
- Avoid exposure to heat sources and place the unit away from flammable, explosive, harsh, or combustible materials, chemicals, or vapors.
- Risk of Explosion. This equipment has internal arcing or sparking parts which should not be exposed to flammable vapors. It should not be located in a recessed area or below floor level.
- This device is intended only for charging vehicles not requiring ventilation during charging.
- To prevent risk of explosion and electric shock, ensure that the specified Circuit Breaker and RCD are connected to building grid.

- The lowest part of the socket-outlet shall be located at a height between 0,5 m and 1,5 m above ground level.
- Adaptors or conversion adapters are not allowed to be used. Cable extension sets are not allowed to be used.

WARNING: Never let people (including children) with reduced physical, sensory or mental capabilities or lack of experience and or knowledge use electrical devices unsupervised.

CAUTION: This vehicle charger unit is intended only for charging electric vehicles not requiring ventilation during charging.

1.2 - GROUND CONNECTION WARNINGS

- Charging station must be connected to a centrally grounded system. The ground conductor entering the charging station must be connected to the equipment grounding lug inside the charger. This should be run with circuit conductors and connected to the equipment grounding bar or lead on the charging station. Connections to the charging station are the responsibility of the installer and purchaser.
- To reduce the risk of electrical shock, connect only to properly grounded outlets.
- **WARNING :** Make sure that during installing and using, the charging station is constantly and properly grounded.

1.3 - POWER CABLES, PLUGS and CHARGING CABLE WARNINGS

- Be sure that charging cable is Type 2 socket compatible on charging station side.
- A damaged charging cable can cause fire or give you an electric shock. Do not use this product if the flexible Charging cable or vehicle cable is frayed, has broken insulation, or shows any other signs of damage.
- Ensure that the charge cable is well positioned thus; it will not be stepped on, tripped over, or subjected to damage or stress.
- Do not forcefully pull the charge cable or damage it with sharp objects.
- Never touch the power cable/plug or vehicle cable with wet hands as this could cause a short circuit or electric shock.
- To avoid a risk of fire or electric shock, do not use this device with an extension cable. If the mains cable or vehicle cable is damaged it must be replaced by the manufacturer, its service agent, or similarly qualified persons in order to avoid a hazard.

1.4 - WALL MOUNTING WARNINGS

- Read the instructions before mounting your charging station on the wall.
- Do not install the charging station on a ceiling or inclined wall.
- Use the specified wall mounting screws and other accessories.
- This unit is rated for indoor or outdoor installation. If this unit is mounted outdoors, the hardware for connecting the conduits to the unit must be rated for outdoor installation and be installed properly to maintain the proper IP rating on the unit.

2 - GENERAL INFORMATION

2.1 - INTRODUCTION OF THE PRODUCT COMPONENTS

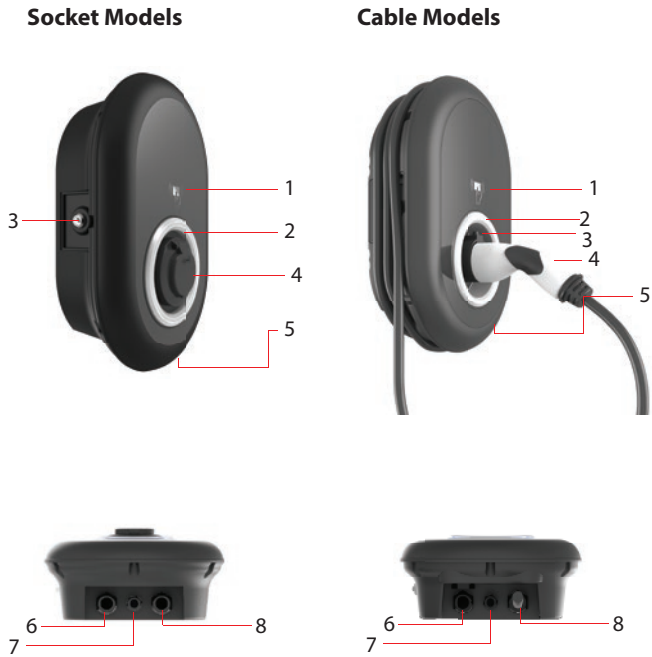


Figure-1

EN Socket Models

1. RFID Card Reader
2. Status indicator LED
3. Access cover for residual current device (Optional)
4. Socket Outlet
5. Product Label
6. Charging station supply inlet gland nut
7. Charging station communication cable gland nut
8. Charging station communication cable gland nut

EN Cable Models

1. RFID Card Reader
2. Status indicator LED
3. Dummy Socket
4. Charging Plug
5. Product Label
6. Charging station supply inlet gland nut
7. Charging station communication cable gland nut
8. Charging cable

2.2 - DIMENSIONAL DRAWINGS

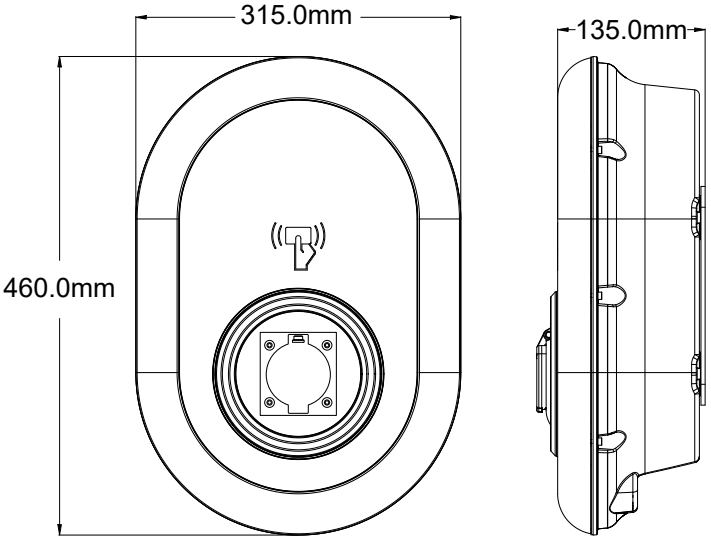


Figure-2

3 - REQUIRED EQUIPMENT, TOOLS AND ACCESSORIES

3.1 - SUPPLIED INSTALLATION EQUIPMENT and ACCESSORIES

Dowels (M8x50 Plastic Dowels)	
Torx T25 Security Screw (M6x75)	
Torx T20 Security L-Wrench	
Wrench	

Table-1

3.2 - RECOMMENDED TOOLS

		
Drill Bit 8mm	Impact Drill	Water Level
		
Volt Indicator	Torx T25 Security Screwdriver	Tester
		
Flathead Screwdriver (Tip width 2.00-2.5 mm)	Pointed Spudger	Right Angle Screwdriver Adapter / Torx T20 Security Bit

Table-2

4 - TECHNICAL SPECIFICATIONS

4.1 - Defenzo Wallbox AC22

This product is compliant to IEC61851-1 (Ed3.0) standard for Mode 3 use.

Model		Defenzo Wallbox AC22
IEC Protection class		Class - I
Vehicle Interface	**Socket Model**	Socket TYPE 2 (IEC 62196)
	Cable Model	5 m Cable with TYPE 2 (IEC 62196) Female Plug
Voltage and Current Rates		400 V AC 50/60 Hz - 3-phase 32 A
AC Maximum Charge Output		22 kW
Required Circuit Breaker on AC Mains		4P-40 A MCB Type-C
Required RCCB on AC Mains (for products which are not equipped with RCCB Type A)		4P -40 A - 30 mA RCCB Type-A
Required AC Mains Cable		5x 6 mm^2 (< 50 m) External Dimensions: Ø 18-25 mm

AUTHORIZATION

RFID	ISO-14443A/B and ISO-15693

MECHANIC SPECIFICATIONS

Material	Plastic
Size	315 mm (Width) x 460 mm (Height) x 135 mm (Depth)
Dimensions (Package)	405 mm (Width) x 530 mm (Height) x 325 mm (Depth)
Weight	5 kg for socket model / 7.1 kg with package, 6.8 kg cable model/ 8.9 kg with package
AC Mains Cable Dimensions	For 22 kW version Ø 18-25 mm

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

Protection Class	Ingress Protection Impact Protection	IP54 IK10 (Optional display have IK08 protection)
Usage Conditions	Temperature Humidity Altitude	-35 °C to 55 °C (without direct sunlight) 5% - 95% (relative humidity, non-condensing) 0 - 4,000 m
Storage Conditions	Temperature Humidity Altitude	-40 °C to 80 °C 5% - 95% (relative humidity, non-condensing) 0 - 5,000 m

4.2 - Defenzo Wallbox AC7

This product is compliant to IEC61851-1 (Ed3.0) standard for Mode 3 use.

Model		Defenzo Wallbox AC7
IEC Protection class		Class - I
Vehicle Interface	**Socket Model**	Socket TYPE 2 (IEC 62196)
	Cable Model	5 m Cable with TYPE 2 (IEC 62196) Female Plug
Voltage and Current Rates		230 V AC 50/60 Hz – 1 phase 32 A
AC Maximum Charge Output		7.4 kW
Required Circuit Breaker on AC Mains		2P-40 A MCB TYPE C
Required RCCB on AC Mains (for products which are not equipped with RCCB Type A)		2P -40 A - 30 mA RCCB Type-A
Required AC Mains Cable		3x6 mm (<50 m) External dimensions: Ø 13-18 mm

AUTHORIZATION

RFID	ISO-14443A/B and ISO-15693

MECHANIC SPECIFICATIONS

Material	Plastic
Size	315 mm (Width) x 460 mm (Height) x 135 mm (Depth)
Dimensions (Package)	405 mm (Width) x 530 mm (Height) x 325 mm (Depth)
Weight	5 kg for socket model / 7.1 kg with package, 5.5 kg cable model / 7.6 kg with package
AC Mains Cable Dimensions	For 1 phase version Ø 13-18 mm

ENVIRONMENTAL TECHNICAL SPECIFICATIONS

Protection Class	Ingress Protection Impact Protection	IP54 IK10 (Optional display have IK08 protection)
Usage Conditions	Temperature Humidity Altitude	-35 °C to 55 °C (without direct sunlight) 5% - 95% (relative humidity, non-condensing) 0 - 4,000 m
Storage Conditions	Temperature Humidity Altitude	-40 °C to 80 °C 5% - 95% (relative humidity, non-condensing) 0 - 5,000 m

5 - INSTALLING CHARGE STATION

5.1 - BOX CONTENTS FOR CHARGING STATION WITH SOCKET AND CABLE

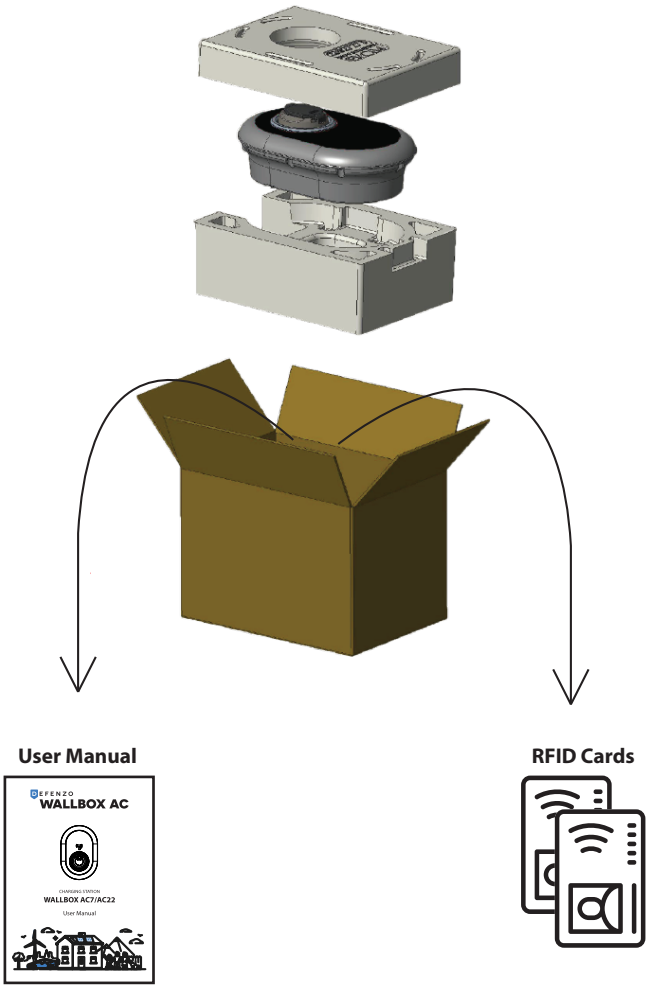


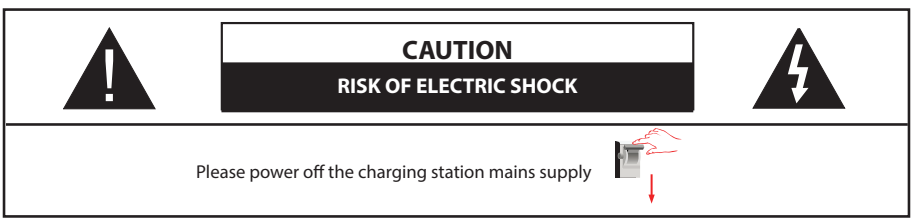
Figure-3

5.2 - PRODUCT INSTALLATION STEPS

CAUTION!

- Ensure that ground resistance of the installation less than 100ohms.
- Prior to mounting your charging station on the wall, read these instructions.
- Do not mount your charging station to the ceiling or an inclined wall.
- Use the wall mounting screws and other accessories specified.
- This charging station is classified as indoor and outdoor installation compatible. If the device is installed outside the building, the hardware that will be used to connect the cables to the charger shall be compatible with outdoor use and the charging station shall be mounted preserving the IP rate of the charger.

5.2.1 - OPENING THE COVER OF THE CHARGING STATION



1. Remove the cover screws with Torx T20 security L-Wrench or Right Angle Screwdriver Adapter using Torx T20 Security Bit.
2. Open the cover.

Figure-4

5.2.2 - WALL MOUNT INSTALLATION

Wall mount installation is common for all charging station models.

1. Open the product front cover following the instructions for cover opening under.
2. Center the charging station using the alignment template, and mark the drill bit holes with a pencil.
3. Drill the wall on the marked points using the impact drill (8mm drill bit).
4. Place the dowels into the holes.
5. Tighten the security scews (M6x75) of the product using Torx T25 Security Screwdriver.
6. Insert the open lead wires into the charging station through the hole on the lower left. Follow the AC Mains Connection instructions on the next pages, depending on the model of the charger. (Single/Three Phase)
7. In case you mount the charging station to conductive metal surface, you can make ground connection via "right-bottom" screw using Earth extension cable as shown in figure-6.
   To ensure the grounding, you need to change the grounding cable position from "a" to "b" as shown in figure-6. Follow the instructions below:

   I. Insert the plastic support, which is inside the artwork pack, to the fixing hole (Position "b")

   II. Fix the grounding cable using the M6x30 screw, which is inside the artwork pack and this screw is also used to assemble to product to the conductive metal surface.
8. Tighten the cable glands as shown in the figure. Before close the cover of the charging station, follow instructions if any function related to these sections are used.
9. To close the cover of the charging station, tighten the cover screws that you removed before with Torx T20 Security L-Wrench or Right Angle Screwdriver Adapter using Torx T20 Security Bit.
10. Mounting the charging station on wall is now finished.

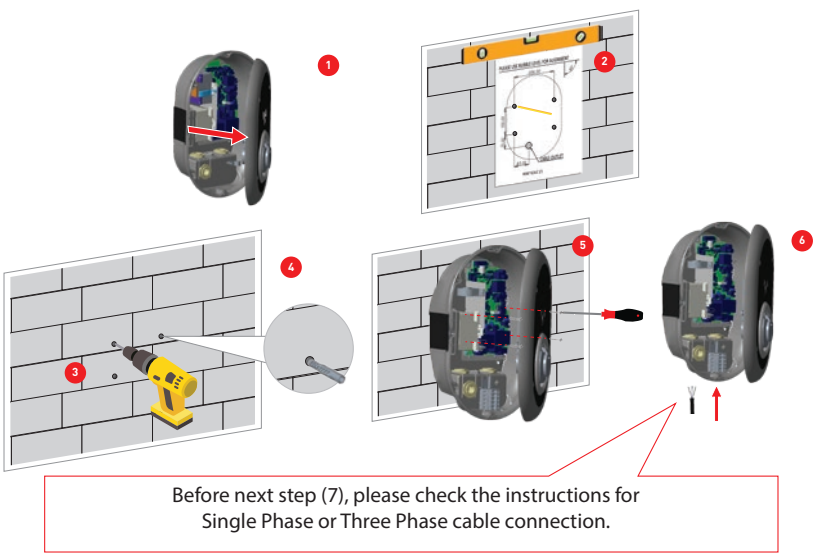


Figure-5

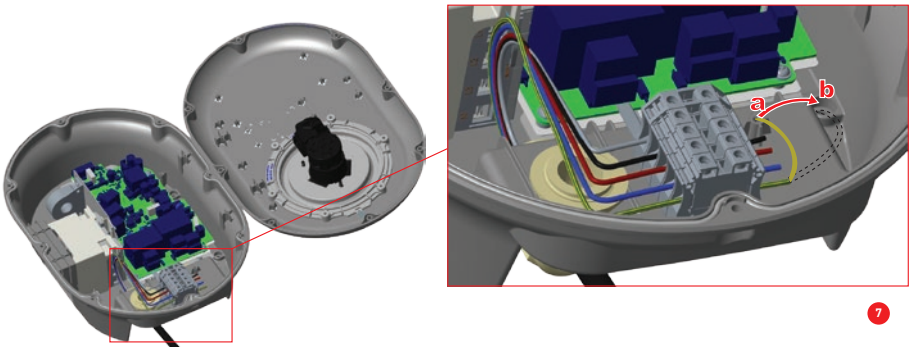


Figure-6

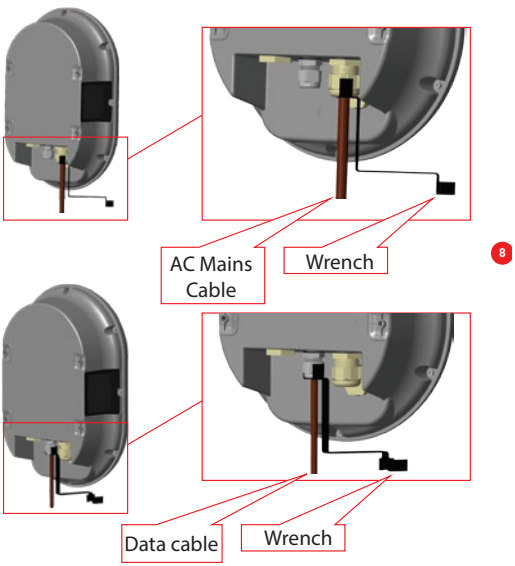


Figure-7

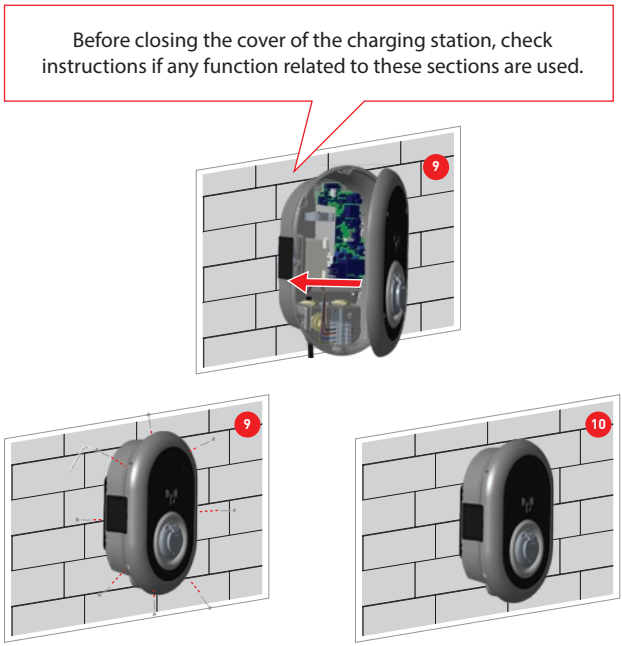

Before closing the cover of the charging station, check instructions if any function related to these sections are used.
9
9
10

Figure-8

5.2.3 - SINGLE PHASE CHARGING STATION AC MAINS CONNECTION

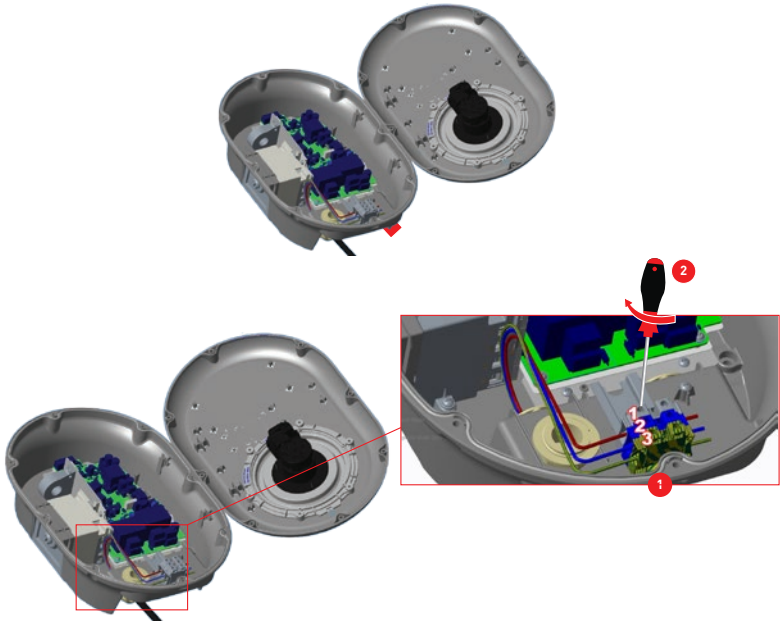


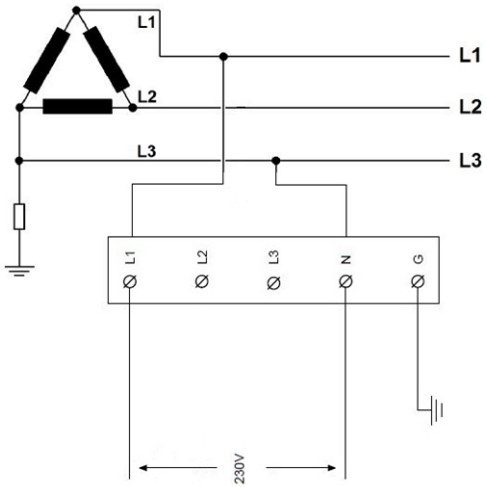
Figure-9

1. Insert the cables to the terminal block as shown in the image. Check the Table-3 below to match Electric Terminal number with AC Cable Color.
2. Tighten the screws on the terminal block as shown in the image with the tightening tourqe of 2.5Nm.

Electric Terminal	AC Cable Color
1	AC L1 (Brown)
2	AC Neutral (Blue)
3	Earth (Green-Yellow)

Table-3

For single phase IT Grid installation, wiring diagram which is shown below should be used. Also grounding type should be set to "IT Grid" from the "Installation settings" menu in web user interface.



5.2.4 - THREE PHASE CHARGING STATION AC MAINS CONNECTION

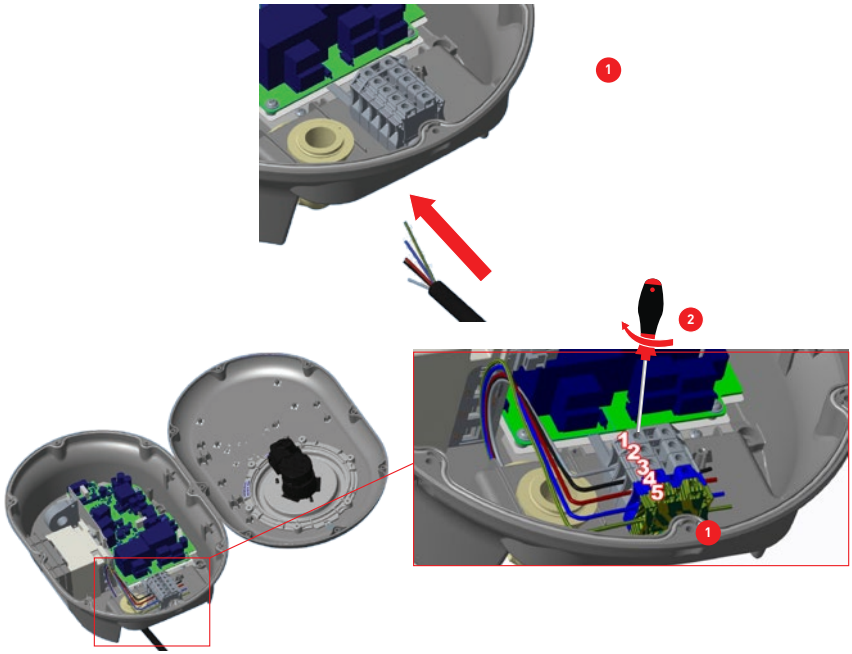


Figure-10

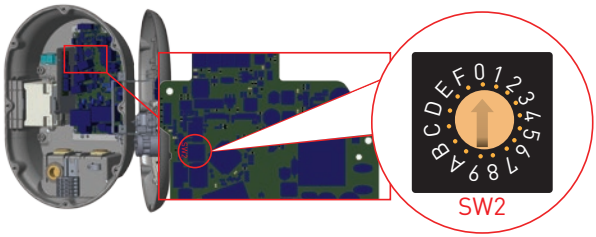
1. Insert the cables to the terminal block as shown in the image. Check the Table-4 below to match Electric Terminal number with AC Cable Color.
2. Tighten the screws on the terminal block as shown in the image with the tightening tourqe of 2.5Nm.

Electric Terminal	AC Cable Color
1	AC L3 (Grey)
2	AC L2 (Black)
3	AC L1 (Brown)
4	AC Neutral (Blue)
5	Earth (Green-Yellow)

Table-4

5.2.5 - ADJUSTING CURRENT LIMITER

The arrow in the middle of the rotary switch must be adjusted by gently rotating with a flathead screwdriver (Tip width 2.00-2.5 mm)to the position of the required current rate. The device current limiter is set to 16A in production by default.



Current Limiter Position	Current Limit	
	Phase	Wallbox AC
0	1 Phase	10 A
1		13 A
2		16 A
3		20 A
4		25 A
5		30 A
6		32 A
7		
8	3 Phase	10 A
9		13 A
A		16 A
B		20 A
C		25 A
D		30 A
E		32 A
F		

Table-5

Required Circuit Braker on AC Mains	
EV Charging Station Current Limiter Setting	C-Curve MCB
10 A	13 A
13 A	16 A
16 A	20 A
20 A	25 A
25 A	32 A
26 A	40 A
32 A	40 A

Table-6

5.2.6 - DIP SWITCH SETTINGS

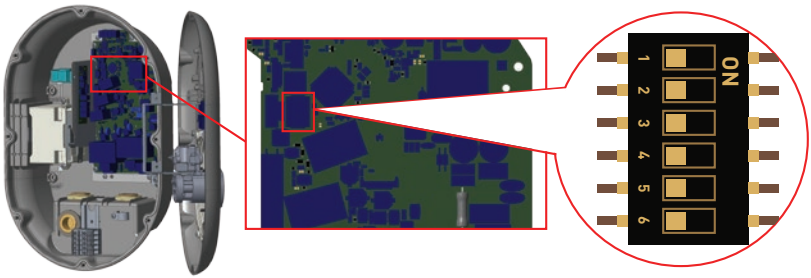


Figure-11

Brief descriptions of the DIP switch pin settings can be found in below table.

Pin Number	Description
Pin-1	RFID Master and User Card Reset
Pin-2	External Enable Input Functionality
Pin-3	Locked Cable Function (only for socket models)
Pin-4-5-6	Power Optimizer (Requires Optional Accessories)

Table-7

5.2.6.1 - DATA CABLE CONNECTION

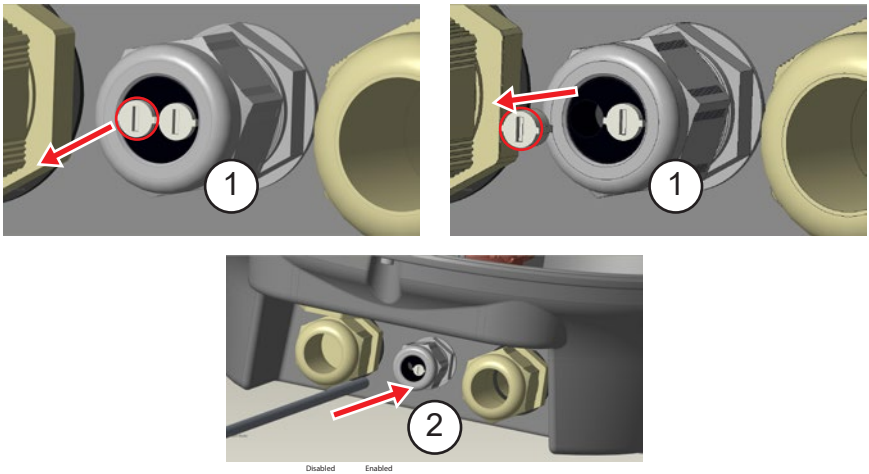


Figure-12

1. Remove rubber cork.
2. Insert cable through the cable hole.
3. Insert the cable through the RCCB housing holes.
4. Finally, to connect the wires, follow the related sections above depending on the functions to be used.

5.2.6.2 - EXTERNAL ENABLE INPUT FUNCTIONALITY

Your charging station has external potential free enable / disable functionality which can be used for integration of your charging station to carpark automation systems, energy supplier ripple control devices, time switches, photovoltaic inverters, auxiliary load control switches, external key lock switches etc. DIP switch position 2 is used for enabling and disabling this functionality.

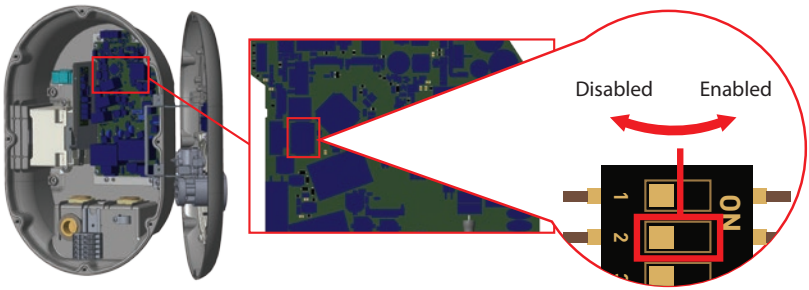


Figure-13

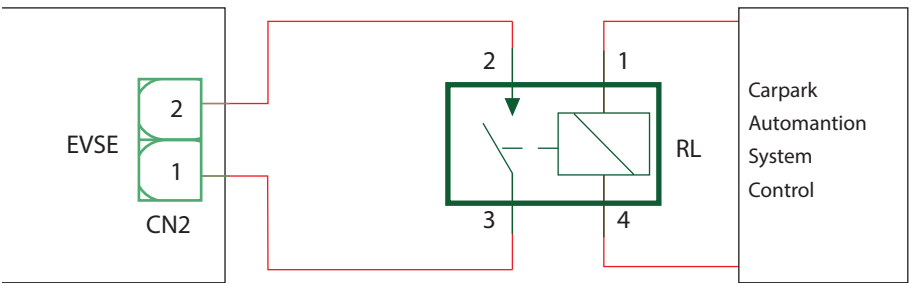


Figure-14

If the externawl relay (RL) is in non-conducting state (open), the charging station will not be able to charge the electric vehicle.

You can connect potential free input signals as shown in above circuitry (see figure-14).

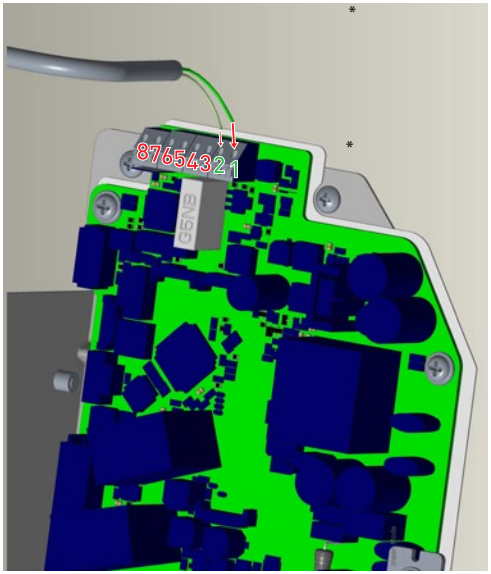


Figure-15

Cable Terminal	Cable Color
1 (CN2-1)	Green
2 (CN2-2)	Green + White Green

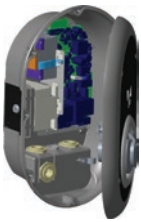
Table-8

5.2.6.3 - LOCKED CABLE FUNCTION (Model With Socket)

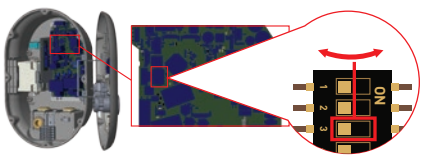
The cable becomes locked and your socket model charging station starts behaving as a cable model.

1. Turn off the power of your charging station.

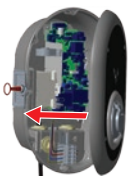
2. Open the product cover as described in the installation manual.



3. To enable locked cable function, toggle DIP switch pin 3 to ON position using pointed spudger or a plastic pointed tool. The DIP switch location is as shown in below figure.



4. Close the product cover as described in the installation manual.



5. Open the front cover of the socket outlet and plug the charging cable to the socket outlet.

6. Turn on the power to your charging station. The cable becomes locked and the charging station starts behaving as a cable model.

Note: When this function is active (PIN 3 is ON), charging cable cannot be unplugged. When you deactivate this function (PIN 3 is OFF), the plug will be unlocked.

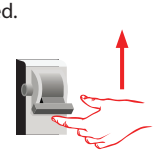


Table-9

5.2.7 - MODE SELECTION SWITCH SETTINGS

This charging station has 3 operation modes. For standart charging the mode selection should be in position 1.

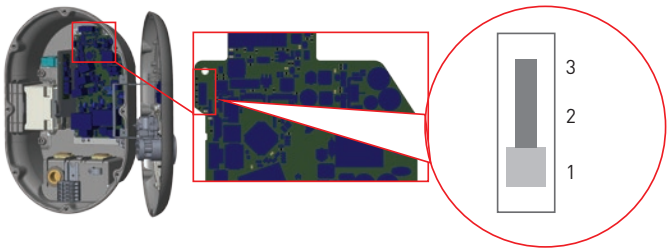


Figure-16

1. **Operation Mode 1 (Standard Charging):** This mode is factory default configuration. When this mode is selected, charging station does not support peak/off peak time or TIC dynamic charging scenarios.
2. **Operation Mode 2 (Postponed Charging):** For this mode, slide switch should be positioned as 2. When this mode is selected, charging station supports "C1-C2 Peak/Off Peak Time" signaling input and reacts accordingly for peak/off peak time charging.
3. **Operation Mode 3 (TIC Dynamic Charging):** When this mode is selected, charging station supports receiving TIC (Tele Information Client) I1-I2 signal and reacts accordingly for peak/off peak time charging and regulates its charging power for dynamic load management according to the information sent by the meter via TIC signal.

5.2.8 - LOAD SHEDDING

This charging station supports load shedding functionality which provides immediate charging current reduction in case of limited supply. Load shedding triggering signal is a dry contact signal which must be provided externally.

When load shedding is activated, charging current reduces down to 8A. When load shedding is deactivated, charging continues with maximum available current.

You can connect potential free load shedding signal as shown in below. See figure-17, table-10 and table-11.

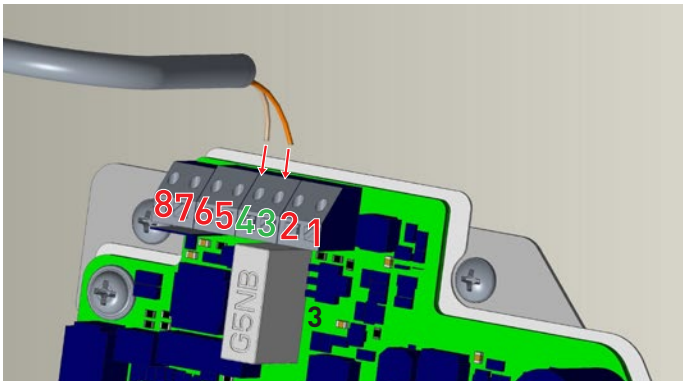


Figure-17

Cable Terminal	Input
3	Load Shedding Input +
4	Load shedding Input –

Table-10

Load Shedding Input State	Behaviour
Opened Contact	Charge at max. available current
Closed Contact	Charge at min. current (8A)

Table-11

5.2.9 - MONITORING OF WELDED RELAY CONTACTS FAILURE

According to IEC 61851-1 and EV/ZE Ready requirements, Defenzo Wallbox AC Charging Station has welded contactor sensing function, and welded contactor information is provided as a contactor welded output signal from the control board. To detect welded contact failure for the relays, CN33 connector output terminals must be used.

In case of a welded contact for the relays CN33 connector output will be 230V AC.

The output which has 230V AC should be connected to a shunt trip for RCCB triggering as shown in figure-18. The cabling should be done as shown in figure-19.

Connector (CN33) terminals must be connected to a Shunt trip module. Shunt Trip module is mechanically coupled to RCCB (or MCB) at the fuse box of the charging station.

The circuitry block diagram that must be used at the fuse box of the charging station is shown below.

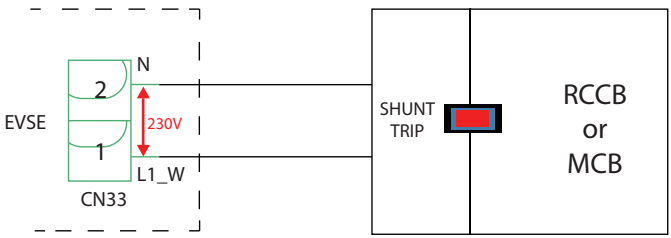


Figure-18

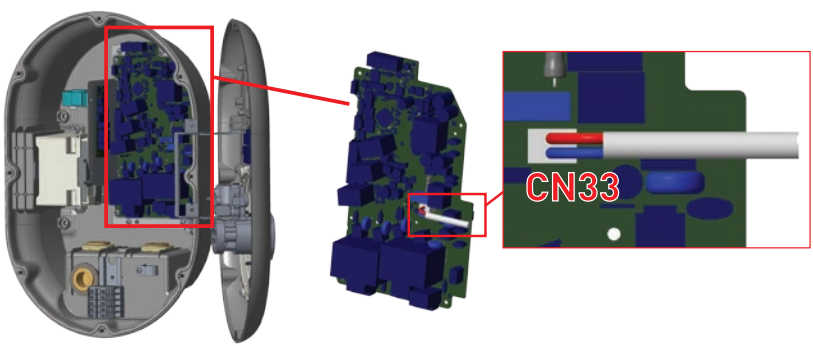


Figure-19

DEFENZO
WALLBOX AC

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