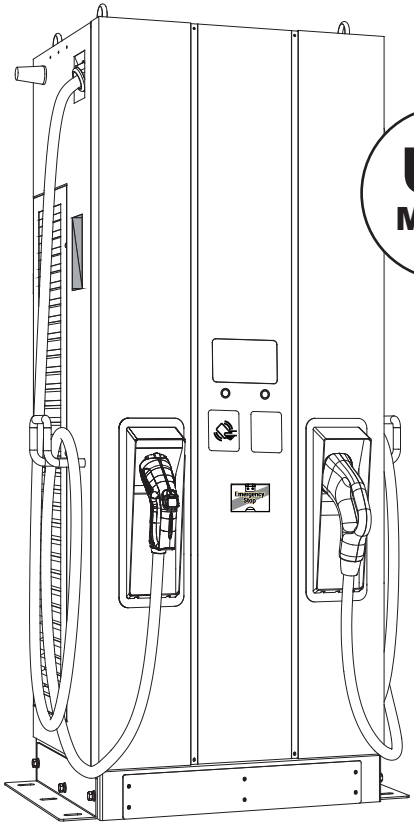
DS90-DS180 Standalone DC Fast Charger

Installation Manual



UL
Model

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Revision History				
Version	Date	Description	Author	
			Writer	Editor
V0.0	2024/07/09	First Issue	Natalie	Tammy
V1.0	2024/11/13	• Added a warning and recycling chapter. • Modified the N-phase wiring method for the EMI box. • Updated the Dynamic Sharing Output mode table.	Tammy	Tammy
V2.0	2024/12/24	• Two holes for RFID and payment system. • AC input protection cover changed due to issue.	Tammy	Tammy
V2.1	2025/04/14	• P9, 14 Remove charging cable which is not supported. • P34 Additional safety shutdown warrning and new type of breaker lock. • P50 Screw and bolt torque requirement updated.	Natlie	Bart
V2.2	2025/07/03	1. Add NACS cable information. 2. Modify Maximum Output Current Table 3. Correct installation caution note. 4. Modify Torque Requirements Table. 5. Modify the back side required area.	Natlie	Jun

Disclaimer

This document is intended to assist with the installation, operation, and maintenance of the Electric Vehicle Supply Equipment (EVSE).

While every effort has been made to ensure the accuracy and completeness of the information in this manual, following the instructions, recommendations, or guidelines provided does not guarantee the proper functioning or the performance of the equipment under any conditions.

Please note that the total weight of each product, including its packaging, typically exceeds 700kg. It is the responsibility of the owner/installer/ operator to determine the appropriate handling equipment and methods for moving the equipment safely.

Compliance with the instruction in this manual is essential, however, it remains the responsibility of the owner/operator to adhere to all applicable local, national, and international codes, laws, and safety standards. By using this equipment, the owner/installer/ operator assumes all risks associated with its installation, operation, and maintenance, including injury, property damage, or equipment failure.

The manufacturer disclaims any liability for damage or injury resulting from the installation or use of the EVSE that is not in accordance with these instructions, or from improper, unreasonable, or unintended use. Failure to comply with the guidelines and instructions outlined in this manual may also result in the voiding of any applicable warranties.

All information, designs, and intellectual property contained in this manual are the exclusive property of the manufacturer and are protected by copyright and patent laws. Unauthorized reproduction or distribution is prohibited. The manufacturer reserves the right to make changes or updates to this manual without notice and is not responsible for discrepancies that may occur between the actual product and this document.

Introduction

The intent of this manual is to provide a guide for the installation of the Standalone DC Fast Charger. The owner/operator of the charger is responsible for contracting an installer, and must ensure that all national/ local codes, laws, and regulations are complied with during the installation.

Compliance with the information in this manual does NOT relieve the owner/operator of their responsibility tocomply with all applicable codes and safety standards.To provide feedback on the contents of this manual or request additional information please contact your supplier.

Standards and References

- NFPA-70 - Article 625 - Electrical Vehicle Power Transfer System
- NFPA-70E - Article 110 - General Requirements for Electrical Safety - Related Work Practices
- NFPA-70E - Article 120 - Establish an Electrically Safe Work Condition
- NFPA-70E - Article 130 - Work Involving Electrical Hazards
- Electric Vehicle (EV) Charging System Equipment [UL 2202:2009 Ed.2+R:09Feb2018]
- Power Conversion Equipment [CSA C22.2#107.1:2016 Ed.4]
- FCC CFR Title 47 Part 15 Subpart B: 2018 Class A
- ICES-003: 2020 Issue 7
- Energy Star
- California Type Evaluation Program / National Type Evaluation Program (NIST Handbook 44)
- ISO 15118 -2
- OCPP 1.6 JSON / OCPP 2.0 JSON

1. Specifications and Features

1.1. Device User Interface

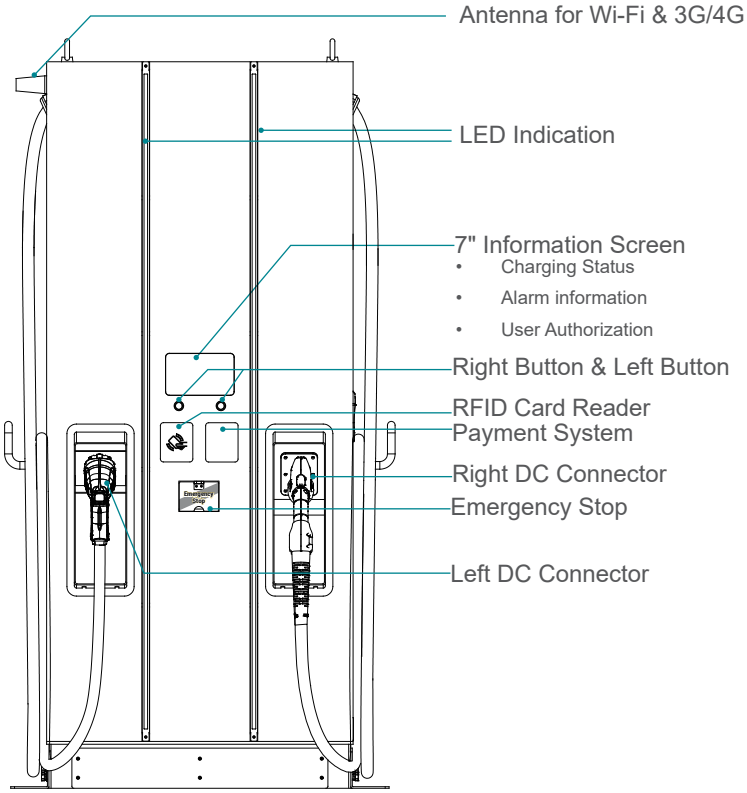


Figure 1-1. User Interface

1.2. Product Specification

DS90/120/150/180 Series		
AC Input	Voltage Rating	3Φ480Vac (+10%, -15%)
	Input Current	**90kW:** 116A@277Vac **120kW:** 155A@277Vac **150kW:** 194A@277Vac **180kW:** 233A@277Vac
	Electrical Distribution	3P+ N+ PE (Wye configuration)
	Power Grid System	TN-S/TT
	Frequency	50/60Hz
	Max. Input Power	196kVA
	Power Factor	> 0.99 at full load
	Efficiency	> 94%, at optimize V/I point
	SCCR	65kA
DC Output	Output Voltage Range	DC 150 ~ 950V (NACS) DC 150 ~ 950V (CCS) DC 150 ~ 500V (CHAdeMO)
	Maximum Output Current	Please refer to table 1-1
	Maximum Output Power	90kW-180KW
	Simultaneously Output Mode	Dynamic Load distribution Please refer to table 1-2
	Voltage Accuracy	±2%
	Current Accuracy	±2%
	Meter accuracy	±1%
Electrical Isolation	Isolation between Input and Output	
Standby Power	< 100W	
Network Connection	External	Ethernet, Wi-Fi and 3G or 4G
	Internal	CAN Bus/ RS485
Input Protection	OVP[*1], OCP[*2], OPP[*3], UVP[*4], GFCI[*5], SPD[*6], OTP[*8]	
Output Protection	OCP, OVP, LVP[*7], OTP[*8], IMD[*9], SCP	

Internal Protection	OTP, AC contactor detection, DC contactor detection, Fuse detection	
Communication protocol	Via OCCP 1.6/2.0 JSON	
User Interface and Control	Display	7-inch LCD
	Button	Right Button: Connector Select Left Button: Home / Stop Charge.
	User Authentication	RFID: Support ISO 14443A/B, ISO 15693, FeliCa Lite-S (RCS966),Backend OCPP: 2D barcode, APP, Mobile Payment, 3rd party payment systems
	Backend Support	OCCP 1.6/2.0 JSON
Environmental Conditions	Operation Temperature	-30°C to 50°C (-22°F to 122°F), will derating from 50°C (122°F) and above
	Storage Temperature	-40°C to 70°C (-40°F to 158°F)
	Relative Humidity	5%~95% RH, non-condensing
	Altitude	≤ 2000m (6560 ft)
Regulations	Safety	UL2202, UL2231 – U.S CSA C22.2#107.1:2016 – Canada
	EMI/EMC	FCC CFR Title 47 Part 15 Subpart B: 2020 ANSI C63.4: 2014 ICES-003:2020 Issue 7
	Charging Standard Protocol	CHAdeMO Ver 1.2 CCS DIN 70121 ISO 15118 NACS J3400
Mechanical Specifications	Dimensions LxWxH	31.5 × 25.6 × 74.8 in. (800 × 650 × 1900 mm)
	Weight (typ.)	<650kg (1433 lbs) with two charging connectors
	DC Charging Connector	See Table 1-2
	Cooling	Fan Cooling
	Enclosure Type	NEMA 3R
	Ingress Protection	IP55
	Impact Resistance	IK10,not included LCD & RFID cover

Table 1-1 Product Specifications

*1 OVP= Over Voltage Protection, *2 OCP=Over Current Protection, *3 OPP=Over Power Protection,
*4 UVP=Under Voltage Protection, *5 GFCI=Ground-Fault Circuit Interrupter, *6 SPD=Surge Protection Device,
*7 LVP=Low- Voltage Protection, *8 OTP=Over Temperature Protection, *9 IMD=Insulation Monitoring Device

Maximum Output Current Table

Connector Code	90 kW	120 kW	150 kW	180 kW
U CCS1 200A	200 A @150~450 Vdc when output voltage up to 950 Vdc the output current is 94 A	200 A @150~450 Vdc when output voltage up to 950 Vdc the output current is 126 A	200 A @150~750 Vdc when output voltage up to 950 Vdc the output current is 157 A	200 A @150~900 Vdc when output voltage up to 950 Vdc the output current is 189 A
T CCS1 300A	300 A @150~300 Vdc when output voltage up to 950 Vdc the output current is 94 A	300 A @150~400 Vdc when output voltage up to 950 Vdc the output current is 126 A	300 A @150~500 Vdc when output voltage up to 950 Vdc the output current is 157 A	300 A @150~600 Vdc when output voltage up to 950 Vdc the output current is 189 A
I CCS1 300A boost 500A	500 A @150~180 Vdc when output voltage up to 950 Vdc the output current is 94 A	500 A @150~240 Vdc when output voltage up to 950 Vdc the output current is 126 A	500 A @150~300 Vdc when output voltage up to 950 Vdc the output current is 157 A	500 A @150~360 Vdc when output voltage up to 950 Vdc the output current is 189 A
A CCS1 375A boost 500A	500A @150~180 Vdc when output vlotage up to 950 Vdc the output current is 94 A	500A @150~240 Vdc when output vlotage up to 950 Vdc the output current is 126 A	500A @150~300 Vdc when output vlotage up to 950 Vdc the output current is 157 A	500A @150~360 Vdc when output vlotage up to 950 Vdc the output current is 189 A
J CHAdeMO 120A	120A @150~500 Vdc	120A @150~500 Vdc	120A @150~500 Vdc	120A @150~500 Vdc
8 NACS 300A boost 400A	400 A @150~225 Vdc when output voltage up to 950 Vdc the output current is 94 A	400 A @150~300 Vdc when output voltage up to 950 Vdc the output current is 126 A	400 A @150~375 Vdc when output voltage up to 950 Vdc the output current is 157 A	400 A @150~450 Vdc when output voltage up to 950 Vdc the output current is 189 A
9 NACS 200A	200 A @150~450 Vdc when output voltage up to 950 Vdc the output current is 94 A	200 A @150~450 Vdc when output voltage up to 950 Vdc the output current is 126 A	200 A @150~750 Vdc when output voltage up to 950 Vdc the output current is 157 A	200 A @150~900 Vdc when output voltage up to 950 Vdc the output current is 189 A

Table 1-2 Maximum Output Current

Dynamic Sharing Output Mode Table

DS90

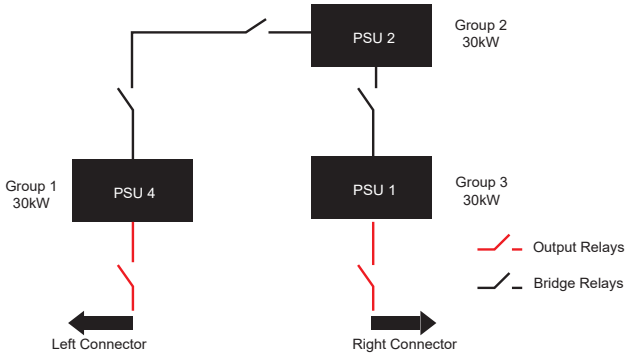


Figure 1-2 DS90 Dynamic Sharing Output mode

	Left Connector	Right Connector
1	0kW	90kW
2	30kW	60kW
3	60kW	30kW
4	90kW	0kW

Table 1-3. DS90 Dynamic Sharing Output mode

DS120

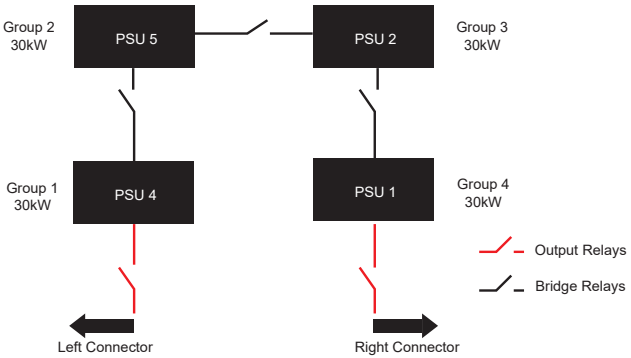


Figure 1-3 DS120 Dynamic Sharing Output mode

	Left Connector	Right Connector
1	0kW	120kW
2	30kW	90kW
3	60kW	60kW
4	90kW	30kW
5	120kW	0kW

Table 1-4. DS120 Dynamic Sharing Output mode

DS150

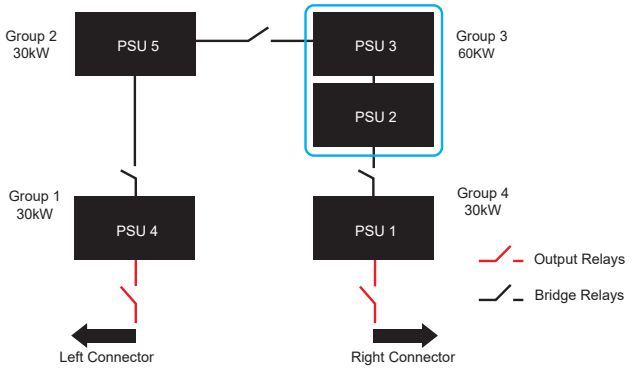


Figure 1-4 DS150 Dynamic Sharing Output mode

	Left Connector	Right Connector
1	0kW	150kW
2	30kW	120kW
3	60kW	90kW
4	120kW	30kW
5	150kW	0kW

Table 1-5. DS150 Dynamic Sharing Output mode

DS180

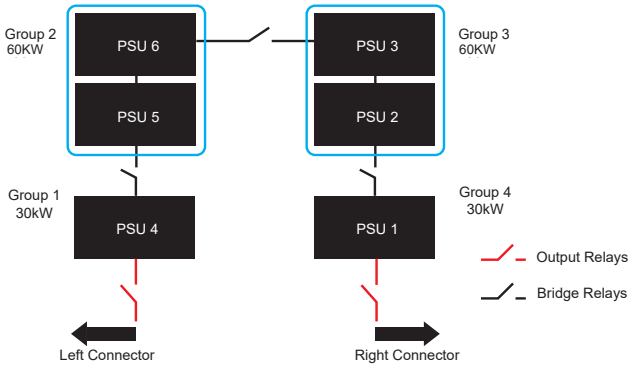


Figure 1-5 DS180 Dynamic Sharing Output mode

	Left Connector	Right Connector
1	0kW	180kW
2	30kW	150kW
3	90kW	90kW
4	150kW	30kW
5	180kW	0kW

Table 1-6. DS180 Dynamic Sharing Output mode

1.3 Dimensions

Unit:inch(mm)

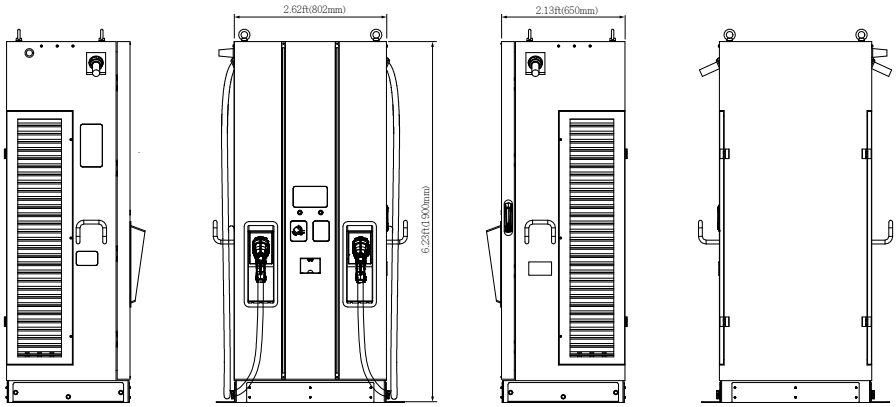


Figure 1-6 Dimensions

1.4 Airflow Direction

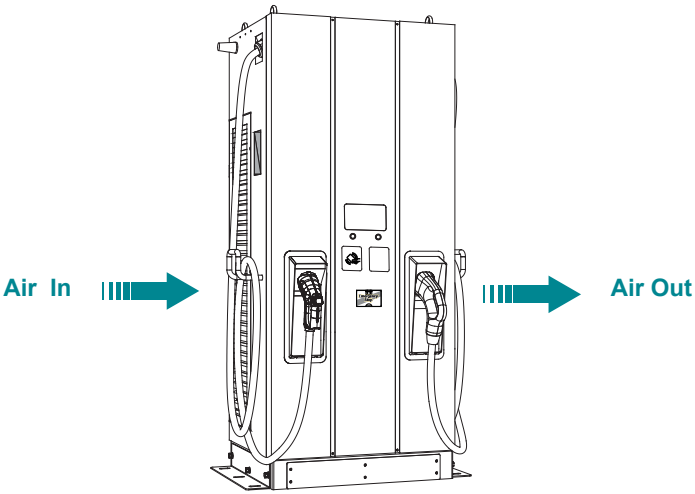


Figure 1-7 Airflow Direction

1.5 Detailed View of Charger

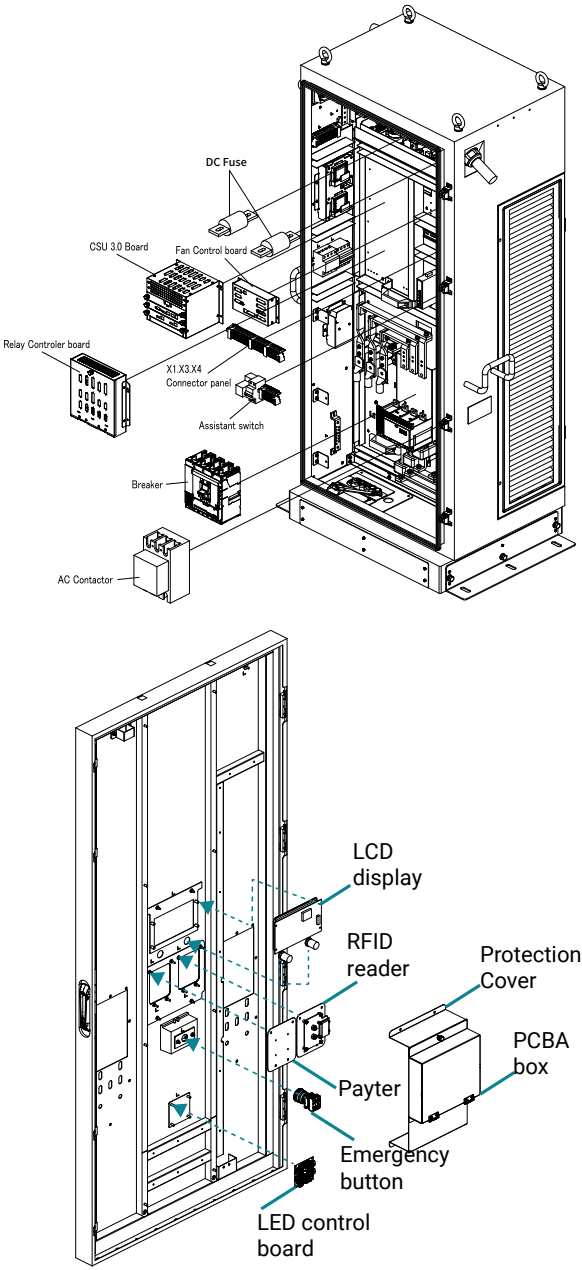


Figure 1-8 Detailed View of Charger

1.6 Version Description

The DS90-DS180 series is available in many different configurations.

1.6.1 Naming Rule

Note

The letter “X” represents a variance in function.

Example: See Table 1-8 and Table 1-9.
DSW$X^1X^2X^3X^4X^5X^6X^7X^8$ X^9 X^{10} X^{11}–RW*

X^1			
U	UL		
A	UL+DC Meter		

Table 1-7. X^1

$X^2X^3X^4$		$X^5X^6X^7$	
X^2 X^3 X^4 = (X^2 × 10 + X^3) × 10^(−1 + X^4)kW		Connector/Socket 1 and 2	
901	90kW	A	CCS1 375A boost 500A
122	120kW	T	CCS1 300A
152	150kW	I	CCS1 300A boost 500A
182	180kW	U	CCS1 200A
		J	CHAdeMO 120A
		8	NACS 300A boost 400A
		9	NACS 200A

Table 1-8. X^2–X^7

X^8		X^9		$X^{10}X^{11}$	
Network Option		Generation, depends on different models.		Customization letter	
D	Ethernet + WiFi + 4G	3/A	non-upgradable	PN	ADA Black 5m cable
3	Payter (payment terminal)	5/B	upgradable	WN	ADA White 5m cable
2	UIC (payment terminal)	8/C	ADA non-upgradable	N7	ADA Black 7m cable
4	Apollo Polar (payment terminal)	6/D	ADA upgradable	WS	ADA White 7m cable
		E	ADA dual holes upgradable		

Table 9. X^8–X^{11}

2. Unpacking and Moving

The EVSE will be delivered on a pallet to a warehouse or specified location. Transportation to the final destination is the responsibility of the customer / contractor.

Damage to the packaging caused by tilting, falling, or impact during transportation can cause damage or defects. If there is any serious damage to the packaging when receiving the unit, notify the supplier.

NOTE

The TiltWatch indicator turns red if the package was tilted over 80°. If the indicator is red:



1. Do not refuse the shipment or receipt.
2. Note the red indicator on the delivery receipt.
3. Inspect the cabinet for damage.
4. If damage is discovered, leave the cabinet in the original package and request inspection from the carrier within 3 days of delivery.
5. Contact the supplier by mail or phone.

WARNING

The EVSE with its packaging can weigh up to 1421.98lbs (645kg). Be careful when unpacking.

without packing weight		with packing weight	
90kW	961.21lbs (436kg)	90kW	1289.70lbs (585kg)
120kW	1005.30lbs (456kg)	120kW	1333.79lbs (605kg)
150kW	1049.40lbs (476kg)	150kW	1377.88lbs (625kg)
180kW	1093.49lbs (496kg)	180kW	1421.98lbs (645kg)

Table 2-1. Charger weight

1) Remove the wooden sides of the package. See following figure.

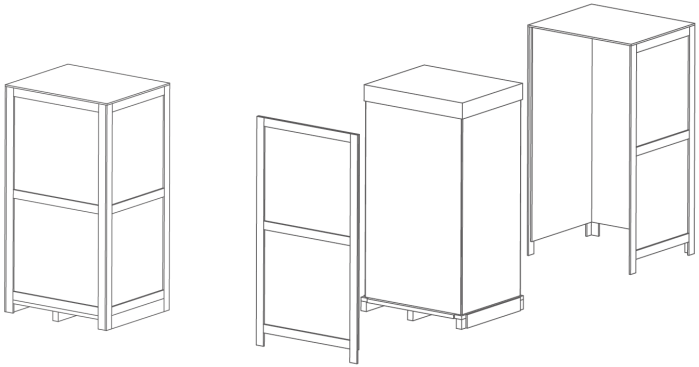


Figure 2-1 Unboxing 1

2) Remove the carton, packing cushion, and film. See following figure.

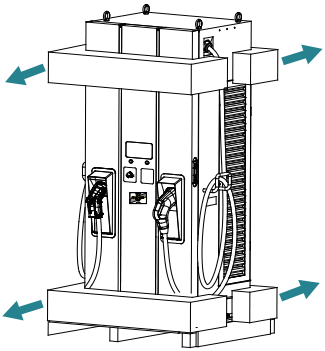


Figure 2-2 Unboxing 2

3) Remove the 4 pcs of M10 bolts that attach the EVSE to the pallet. See following figure.

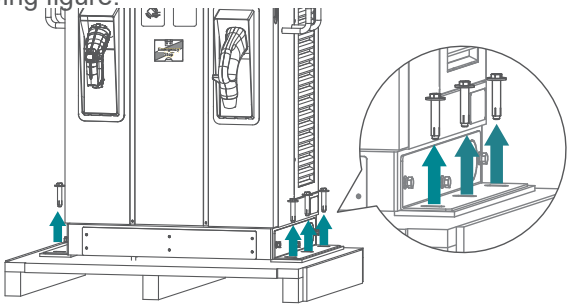


Figure 2-3 Detaching from Pallet

4) To move the EVSE using a crane, attach a bridle hitch with four legs to the eye bolts using ¼ in. (6mm) diameter steel cables. Each leg of the hitch should be 31.5 in. (800mm) in length. See following figure.

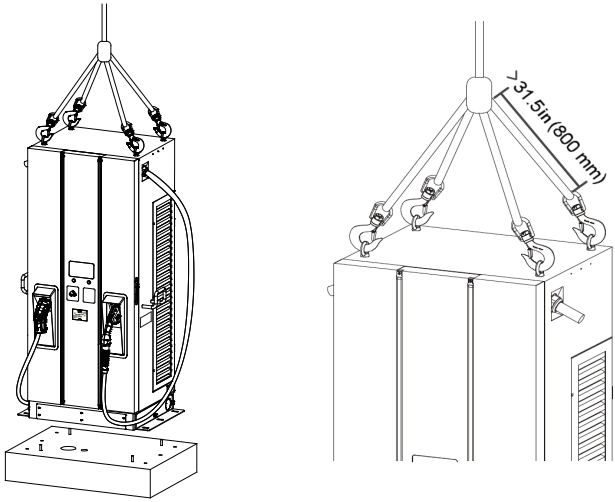


Figure 2-4 Moving the EVSE via Crane

5)To use a forklift to move the EVSE, first remove the bottom trim panels from the front and back of the EVSE, then lift the EVSE with the forklift. See following figure.

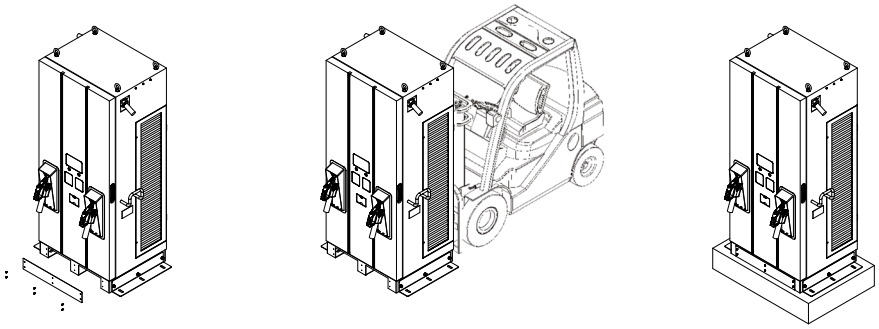


Figure 2-5 Moving the EVSE via forklift

3. Installation

3.1 Warnings, Cautions and Notes



WARNING

Do not use this product if the power or charging cable is damaged.



WARNING

Do not use this product if the enclosure or charging connector is broken, damaged, or open.



WARNING

Do not insert any tools, materials, fingers, or other body parts into the charger or EV connector.



WARNING

The EVSE should only be installed by a licensed contractor or licensed contractor or licensed technician. Comply with all applicable national and local building codes, electrical codes, and safety standards.



WARNING

The EVSE should be inspected by a qualified installer prior to initial use.



CAUTION

Do not twist, swing, bend, drop or crush the charging cable. Never drive over it with a vehicle.



CAUTION

See following figure. Power feed must be 3 Phase WYE configuration with a TN(-S) or TT grounding system.

- TN(-S) system: In this configuration, both the neutral (N) and the protective earth (PE) of the power distribution system are directly grounded.The charger's PE is connected to the distribution system's PE, and the neutral (N) and PE conductors are kept separate throughout the installation.
- TT system: the neutral (N) and the PE of the power distribution are directly connected to the earth. The PE of the charger equipment is isolated to the PE of power distribution to the earth.

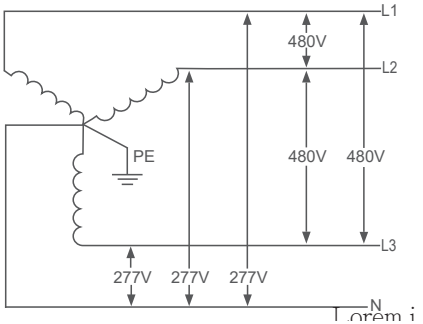


Figure 3-1. 277/480V Three-Phase Y Wiring Connection

CAUTION
The EVSE should be installed in an area with free-flowing air.

CAUTION
The disconnect switch for each ungrounded conductor of AC input shall be provided by installation contractor or technician in accordance with the National Code, ANSI/NFPA 70.

CAUTION
A cord extension set or second cable assembly shall not be used in addition to the cable assembly for connection of the EV to the EVSE.

DANGER
The lighting flash with arrowhead within a triangle is intended to tell the user that parts inside the product are risk of shock to person.

NOTE
Read all the instructions before using and installing this product.

NOTE
The capacity of the power supply should be higher than 196kVA for the EVSE to function correctly.

NOTE
The EVSE should have a minimum clearance of 39.4 inches (1000 mm) around the unit, except for the backside, which requires only 15.75 inches (400 mm) of clearance. Refer to NEC Table 110.26(A)(1), Condition 2, for equipment rated 151-600V.

NOTE
WI-Fi and 3G/4G signal strength should be tested during charger installation. The RSSI (Received Signal Strength Indication) should be higher than -65dBm. Poor connection quality might interrupt charging process or data transmissions.

3.1.1 Contractor Safety Guide

Introduction

- A safe work environment for everyone - participants, installation and demolition crews, contractors and subcontractors.
- Ultimately, it is the responsibility of contractors to ensure the safety and safe work practices of their employees and subcontractors who may be working at the site on their behalf.
- This guide provides a simple reference guide with basic rules for implementation. This guide does not outline every single safety standard: It is designed to be a supplement to participants, contractors and subcontractors.
- Contractors, subcontractors and employees should cooperate with their employers and other persons in complying with safety regulations and instructions.

In particular, employees should:

1. Obtain the qualified authorization of the responsible unit in the construction area.
2. Work safe.
3. Not do anything to endanger themselves or other persons.
4. Use personal protective equipment as required and take reasonable care of it when it is not in use.
5. Report unsafe activities immediately to supervisors or the responsible person in control of the workplace.
6. Report all accidents and dangerous occurrences to the supervisor immediately after they happen.

1.Requirements for workplace conditions

- Set up suitable fencing to isolate the construction area from outside
- Close and secure all entrances when the site is unattended
- Hang warning notices nearby which show the following information: warning icon and phone number of person in charge
- Install sufficient lighting fixtures



2.Cleaning up

- Keep work areas (including accessways) free from debris and obstructions
- Keep ground surfaces tidy and flat, to avoid people tripping or being hurt by tools or other objects
- Stack and store equipment and materials in a tidy and stable manner
- Regularly clean up and dispose of waste
- Remove all surplus materials and equipment after completion of work



3.Fire hazards

- Beware of flammable materials and goods. Keep them away from work areas



4.Protection against high temperatures on the worksite

- Erect a sunshade or shed to shelter workers from the heat and sun
- Set up cooling equipment, such as exhaust fans
- Make water dispensers available
- Provide suitable protective clothing such as hat, sunglasses and long sleeves to protect workers from heat stroke and UV rays



5.Inclement weather

- Secure all scaffoldings, temporary structures, equipment, and loose materials
- Check and implement SOP to ensure disconnection of gas supplies, electrical circuits and equipment
- Inspect worksites to ensure protection against ingress of water or dust
- Inspect the drainage system for blockages and remove if found
- Stop all outdoor works except for emergency works



6.Ladders

- Only use ladders that meet local safety regulations
- Do not use wooden ladders
- When working at height, it is recommended to use platforms instead of ladders
- If using a platform is not practicable, a supervisor should assess the potential risk and provide safety

- protection equipment for workers
- Use non-conductive ladders made of glass-fiber or reinforced plastic when carrying out electrical work
- Assign assistants to provide support when working on ladders
- Check all ladders for broken rungs or other defects before use and periodically
- Fully open stepladders when in use
- Do not stand on the top two rungs of a ladder
- Do not overreach when working on a ladder
- Beware of overload restrictions

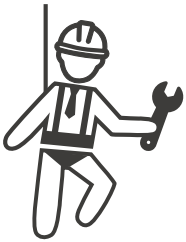


Country	Standards
British	BS1129,BS2037,EN131,EATS13/1
USA	ANSI A 14.1,ANSI A 14.2,ANSI A 14.5
Australia New Zealand	AS 1892.2-1922,AS/NZS1892.1, AS/NZS 1892.3
Canada	CSA Z11 M81

Table 3-1 Common Standards for Ladders

7.Working at height

- Avoid working at height by using alternative tools and methods as far as practicable
- It is strongly recommended to build suitable scaffolding or work platforms
- Provide fall arrest systems for workers if it is impracticable to use working platforms
- Secure all materials and tools to prevent them falling from height



8.Lifting operations

- Have lifting gear and apparatus regularly inspected and tested by qualified persons
- Isolate and cordon off lifting areas to keep out non-construction personnel
- Ensure that lifting routes do not cross buildings or people, and avoid collision with objects
- Do not exceed safe working load limits



9.For on-site workers

- Plan all work
- Turn off power (work with live parts de-energized whenever possible)
- LOTO (Lock Out, Tag Out)
- Live electrical work permit (input terminals with HV after door open)
- Use personal protective equipment (PPE)
- Safe workplace conditions and space
- Adhere to other occupational health, safety and security codes, such as those published by OSHA



10.Reference standards

- Adhere to the following codes:
- NFPA-70E -2021 Sec 110.3 (Electrical Safety in the Workplace)
- NFPA-70E -2021 Sec 130.4 (Shock Risk Assessment)
- NFPA-70E -2021 Sec 130.5 (Arc Flash Risk Assessment)



3.2 Required Area for Placing and Maintaining

See following figure. Required a space of 104.33in x 110.23in (2650mm x 2800mm).

This space is calculated as follows:

- EVSE Size: W = 25.6in (650mm) × D = 31.5in (800mm) × H = 74.8in (1900mm).
- Front side clearance: 39.37in (1000mm), in order to open the front door.
- Left and right clearance: 39.37in (1000mm), in order to open left and right door.
- Backside clearance: Suggest 15.75in (400mm), in order to open the left and right doors 180 degrees and ensure sufficient space for installing roof cable management(Optional).

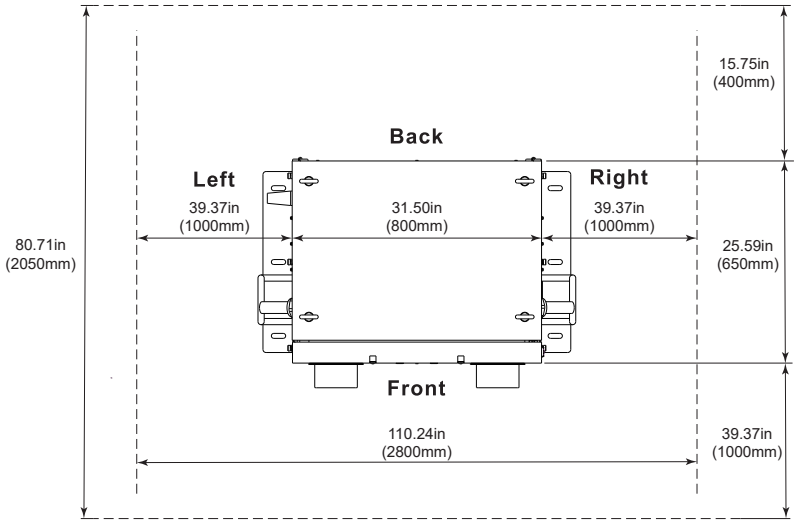


Figure 3-2 Placement Dimension Requirements

3.3 Tools and Materials

Type	Description
Philips Screwdriver	No. 2 and 3
Adjustable Wrench	
Socket Wrench	8mm, 10mm, 17mm, and 18mm
Electrical Tape	Black / 15mm (0.6 in.) Width
Crimping Pliers for Ring Terminal	Hexagonal
Wire Stripper	
Wire Cutters	
Crane / Forklift	1500 lbs (680kg) minimum
Cable gland	
Waterproof sealing glue	

Type	Description
AC Input Cable	350kcmil (177mm²) for L1, L2, L3, N, and 4AWG (21.15mm²) for PE. A 600V, 75°C, XLPE power cable is recommended.
Ring Terminal	Ring Terminal for L1, L2, L3, N (Inner Diameter: 10.5mm (0.41 in.)) Ring Terminal for PE (Inner Diameter:8.4mm (0.33 in.))
Ethernet Cable	1.8m
MCCB	300A or above, with 30mA GFCI.

Charger	Power Wire Size (Cu)	Ring Terminal Info	Breaker (Amp)
90kW	1/0 AWG	1/0 AWG, 3/8" or 1/2" stud hole	150A
120kW	4/0 AWG	4/0 AWG, 1/2" stud hole	200A
150kW	250 kcmil	250 kcmil, 1/2" stud hole	250A
180kW	350 kcmil	350 kcmil, 1/2" stud hole or 5/8" stud hole	300A

Table 3-2 Tools and Materials

NOTE

The breaker current rating should be determined and selected by a qualified local electrician.

3.4 Building the EVSE Base

See following figures.

1) Build a level concrete base with the following minimum dimensions:

- Area: 42.91in (1090mm) × 29.52in (750mm)
- Height : 7.87in (200mm)

2) Install a PVC AC cable conduit smaller than Ø4.02in (Ø102mm)

3) Install a PVC SFTP Ethernet cable conduit smaller than Ø1.34in (Ø 34mm).

4) Attachment method 1: Install 4 M12 threaded rods at a length of 1.57in (40mm) per Figure 12 and Figure 13. The threaded rods need to be installed within the following tolerance of the screw holes on the EVSE:

- Short Axis: ±.08in (2mm)
- Long Axis: ±.32in (8mm)

NOTE

It is recommended to create or use a metal match-drill plate, per Figure12, to ensure placement of threaded rods and holes are in the proper position.

5) Attachment method 2: Drill six Φ.63in (Φ16mm) bolt holes to use the 2 L-brackets that come in the accessory pack. See following figure

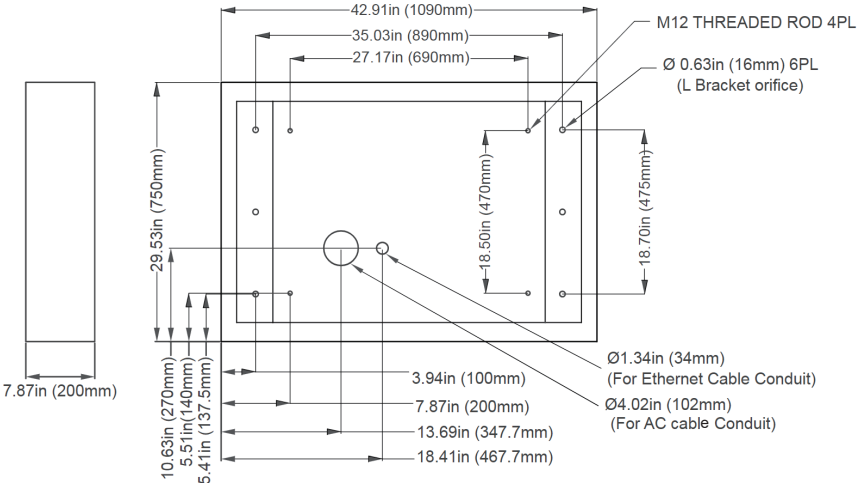


Figure 3-3 Installation Dimensions

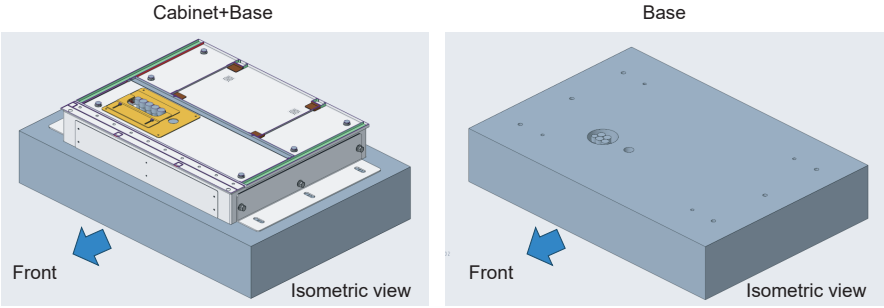


Figure 3-4 Isometric view

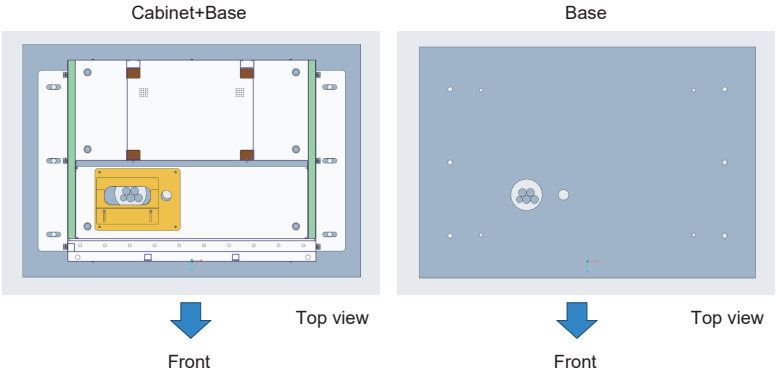


Figure 3-5 Top view

6) Extend the 3 phase 5 wire AC input cables from conduit of concrete base. See following figure.

- AC Cables: At least 19.69 in (500mm) width for L1, L2, L3, N, and 4 AWG (21.15mm²) for PE. Include ring terminals with a diameter of 0.41 in. (10.5mm) for L1, L2, L3, N, 0.33in (8.4mm) for PE.
- If internet is connected via Ethernet, expose at least 78.75in (1800mm) of cable from the conduit.

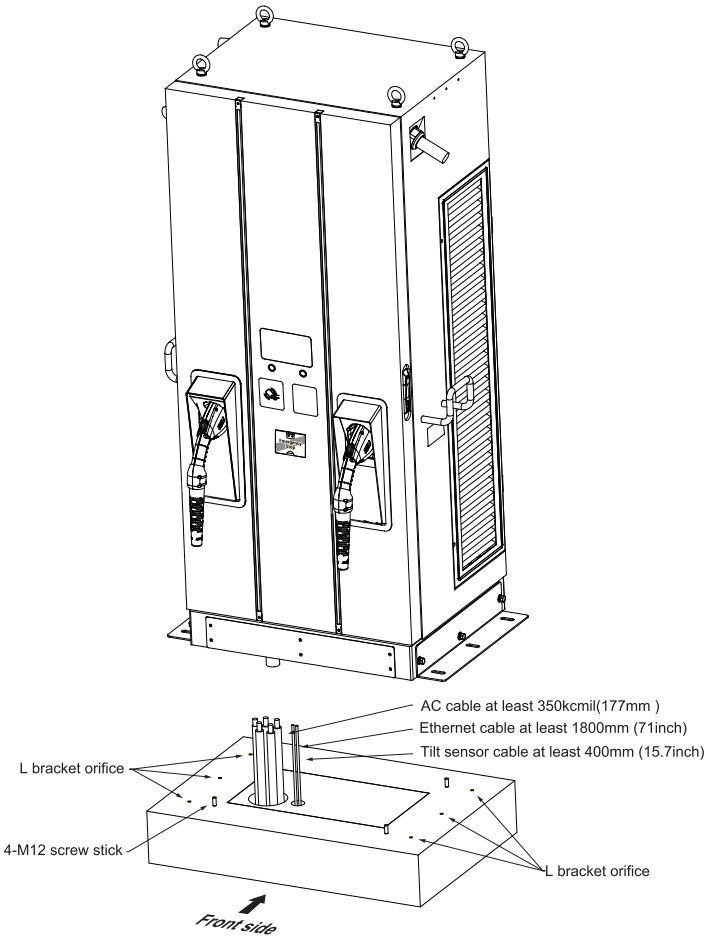


Figure 3-6 Cable Throughput

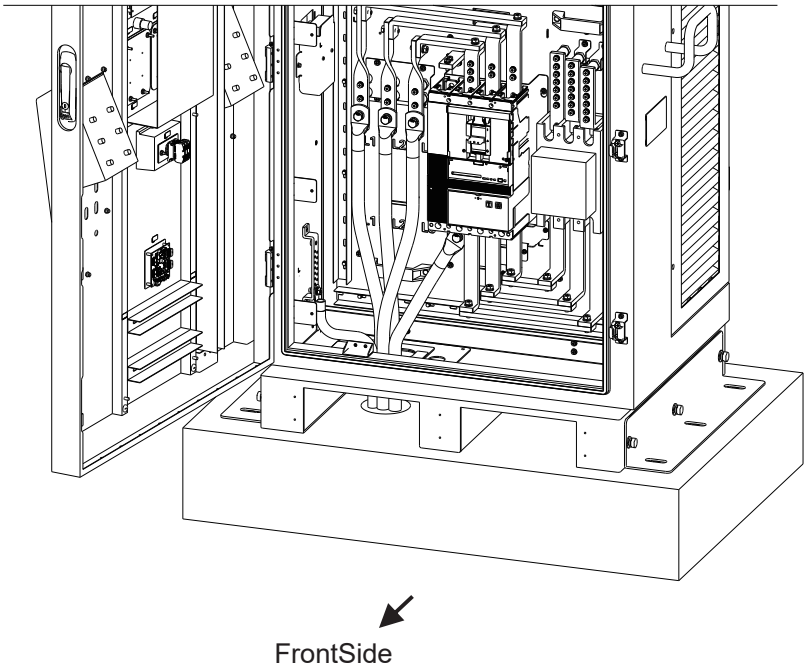


Figure 3-7 Cable Throughput

3.5 Securing the EVSE (Method 1)

1) Lift the charger over the concrete base. See following figure.

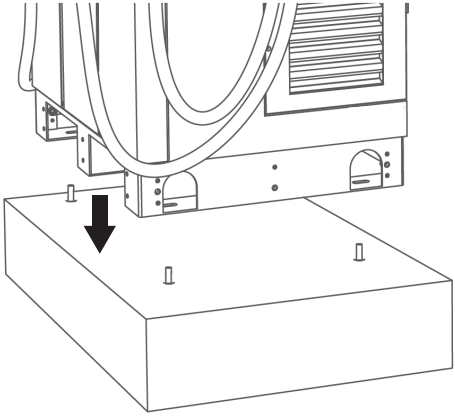


Figure 3-8 EVSE Placement

2) Pull the input cables through the bottom hole of the charger.

3) Attach 4 washer and 8 nuts (2 each) to the 4 M12 threaded rods. See following figure.

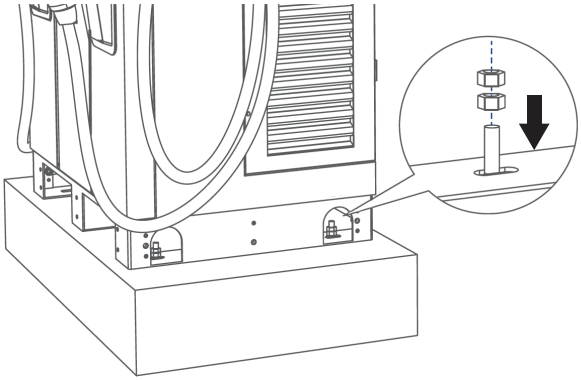


Figure 3-9 EVSE Attachment

4) Attach the base cover (in the accessory pack) to the EVSE. See following figure.

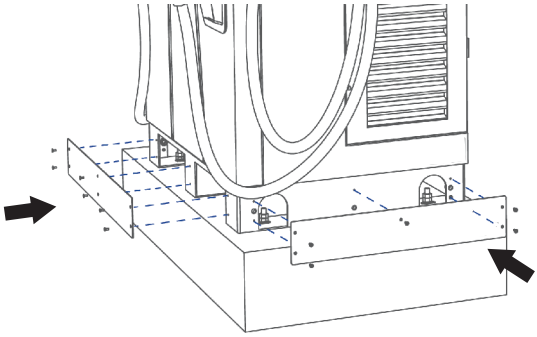


Figure 3-10 Base Cover Install

3.6 Securing the EVSE (Method 2)

1) Attach the L-brackets using 6 M12 expansion bolts. See following figure.

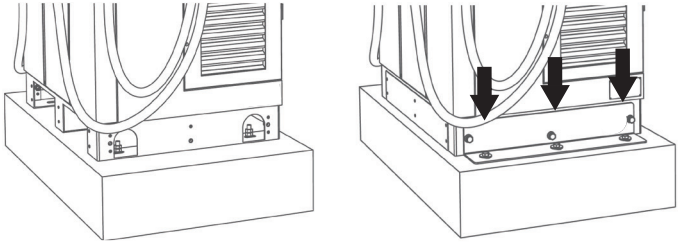


Figure 3-11 L-Bracket Install

NOTE

If the eye bolts on top of the cabinet are removed, the plastic bolts (from the accessory pack) must be installed using waterproof sealant. See following figure.

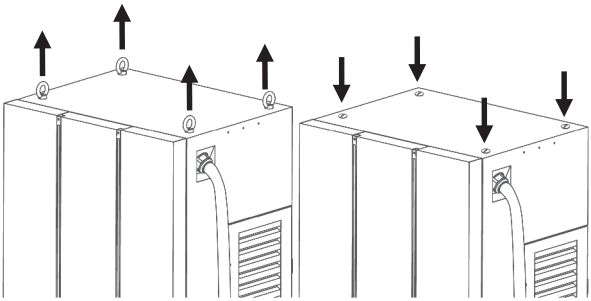


Figure 3-12 Eye Bolt Removal

3.7 Cable Installation

1) Open the door and remove the protective cover for the wiring. See following figure.

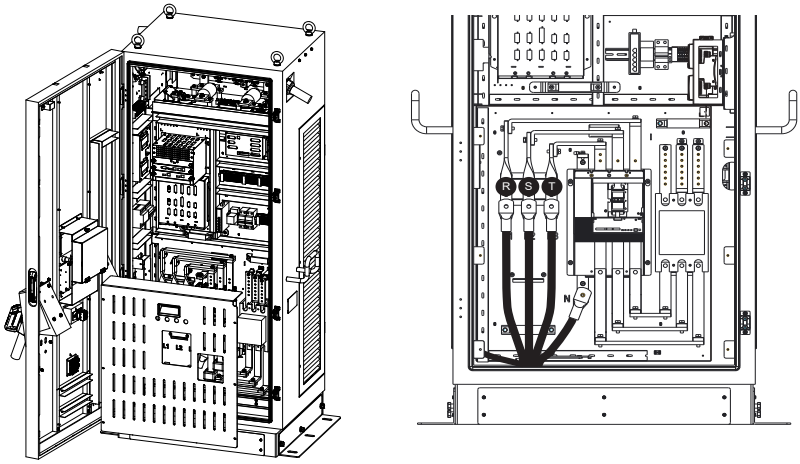


Figure 3-13 Remove proctection cover

2) Cut and strip AC cables according to requirement. Clamp ring terminals on AC cables.

3) Connect AC cables L1, L2, L3 and N to the busbars (See following figure). Attach each wire and torque the fasteners according to "Appendix B - Torque Requirements Table".

4) Connect the PE wire (Green/Yellow) to Grounding position of the EVSE and torque the fastener according to "Appendix B - Torque Requirements Table".

5) Ensure you have enough slack in each cable, then fasten the cable grand (if needed). See following figure.

6) Route the AC power cables to the power distribution box.

7) Connect the PE wire (Green/Yellow) to the ground point of the power distribution box.

8) Short the Neutral to the ground point to meet TN (-S) grounding system requirements.

9) Connect the Ethernet cable to the EVSE RJ-45 port. See following figure.

10) Connect L1, L2, L3, and the Neutral wire to the external breaker.

3.8 Seal the Cable Entry Hole

The cable entry hole needs to be sealed to maintain an IP55 rating for the EVSE.

1) Seal the hole with flame retardant material and electrical insulating foam or another sufficientmethod. Consult local electrical code to assure compliance and a proper seal.

3.9 Connecting the Upstream Circuit Breaker

Upstream circuit breaker selection:

It is the responsibility of the installer to choose an appropriate SOR (Shunt Opening Release) circuit breaker (in accordance with local codes) or equivalent device, for the safety function of the EVSE to be activated. See following figure.

NOTE

Below are reference CBs:

Part Number	Nomenclature	Manufacturer
3VA9978-0BL33	208-277 Vac/220-250 Vdc	Siemens
LV429387	208-277 VAC	Schneider

NOTE

The SOR circuit breaker should have a maximum withstand voltage of 277Vac.

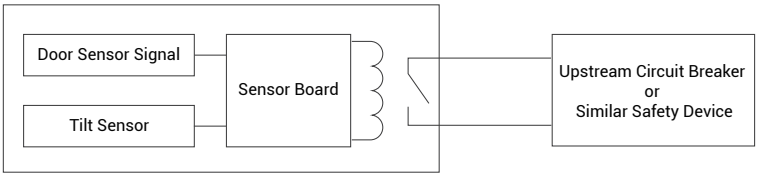


Figure 3-14 Functional Block Diagram

3.10 Connecting the Sensor Board

See following figure.

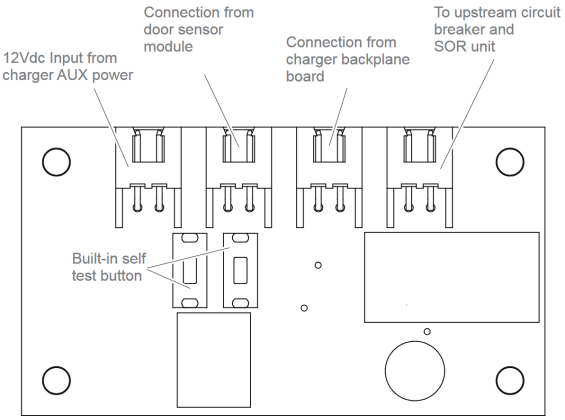


Figure 3-15 Sensor Board Connectors

3.11 Wire Specifications

1) Connect UL1015 22AWG 105°C 600V wires from the sensor board to the upstream circuit breaker. See following figure.

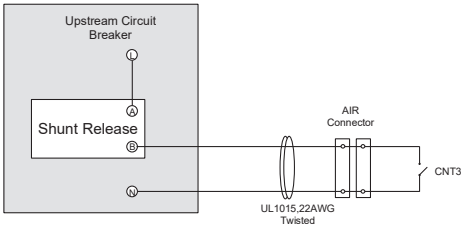


Figure 3-16 Control Circuit

3.12 Breaker Lock Removal

Safety Shutdown Process

Step 1. Put on insulating gloves.

Step 2. Turn off upstream breaker.

Step 3. Remove the AC side protection cover.

Step 4. Apply multimeter to check busbar voltage and wait for it closes to 0 V, and turn off all breakers of the charger. (Include main breaker, aux breaker and SPD breaker)

Step 5. Remove the AC input cables.

Type 1

1) Locate the breaker lock. See following figure.

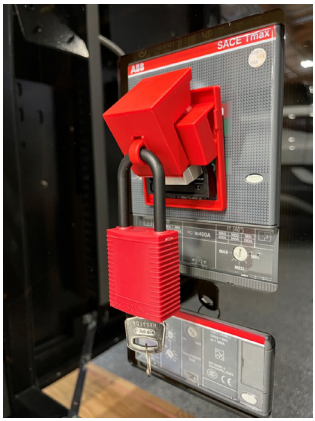


Figure 3-17 Type 1 Breaker lock

2) Turn the lock key to unlock and remove the lock. See following figures.

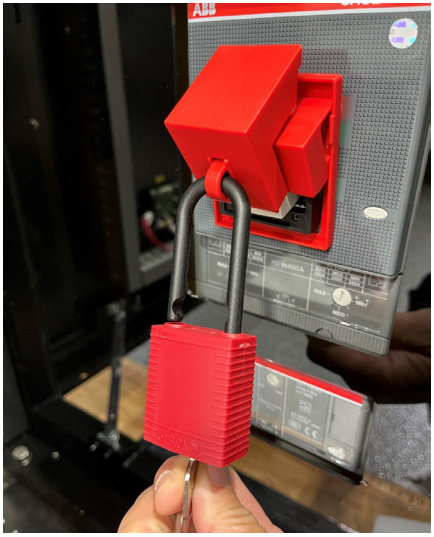


Figure 3-18 Breaker Unlock



Figure 3-19 Lock Removal

3) Open the flap to locate the knob. See following figure.



Figure 3-20 Lock Flap Open

4) Turn the knob counter-clockwise and remove the breaker lock. See following figures.



Figure 3-21 Turn Knob



Figure 3-22 Remove Lock Flap

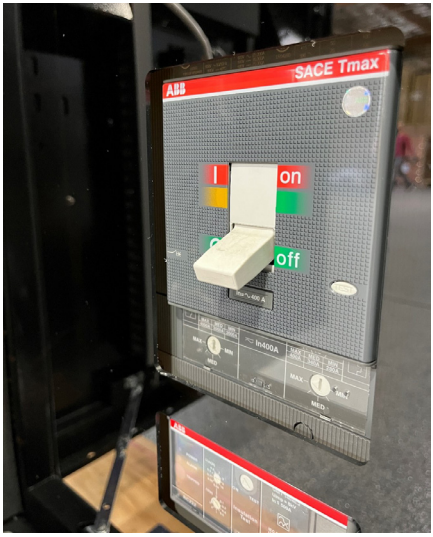


Figure 3-23 Breaker Unlock

Type 2

1) Locate the breaker lock. See following figure.



Figure 3-24 Type 2 Breaker lock

2) Turn the lock key to unlock and remove the lock. See following figures.



Figure 3-25 Breaker Unlock



Figure 3-26 Lock Removal

3) Unscrew counterclockwise on the breaker lock. See following figure.



Figure 3-27 Lock Flap Open

4) Take off the breaker lock from the lever. See following figures.



Figure 3-28 Take off the breaker lock

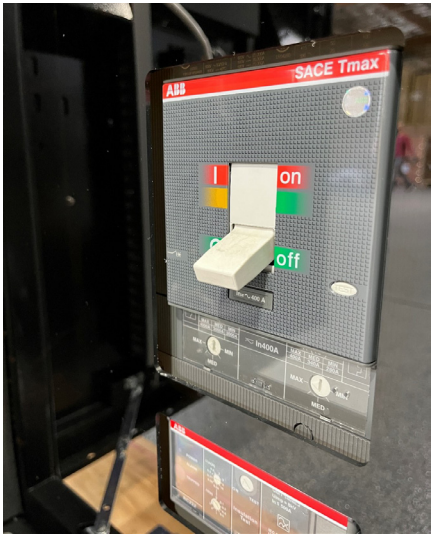


Figure 3-29 Breaker Unlocked

4. Setup

4.1 Laptop Setup

Requirements

- A laptop with a wireless Internet connection and an RJ45 port.
- Connect an RJ45 cable. See following figure.
- Laptop IPV4 static IP address set to 192.168.1.1. See following figure.

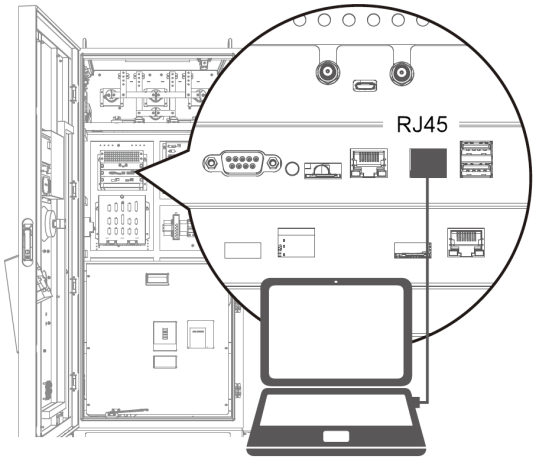


Figure 4-1. RJ-45 Port

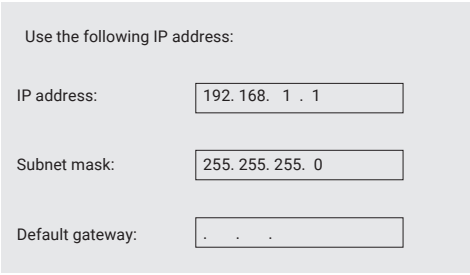


Figure 4-2. IPV4 IP address

4.2 Login to the EVSE

1) In a web browser, navigate to 192.168.1.10.

2) See following figure. On the EVSE Homepage, login with the credentials that follow:

- Account: admin
- Password: 1231231238

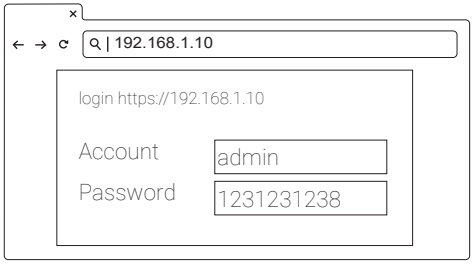


Figure 4-3. Login

4.3 Setup the Wi-Fi Network

1) Select Network. See following figure.

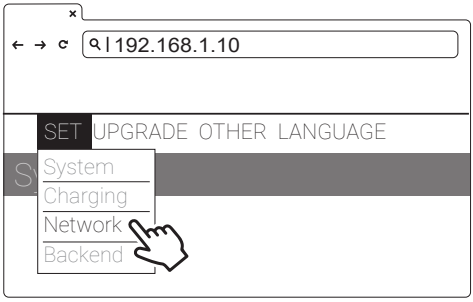


Figure 4-4. SET Menu

2) Select Wi-Fi Module. See following figure.

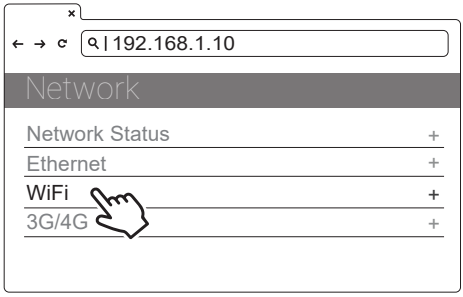


Figure 4-5. Network Select

3)Select Wi-Fi modes and fill in the SSID and Password, according to your requirements. See following figure.

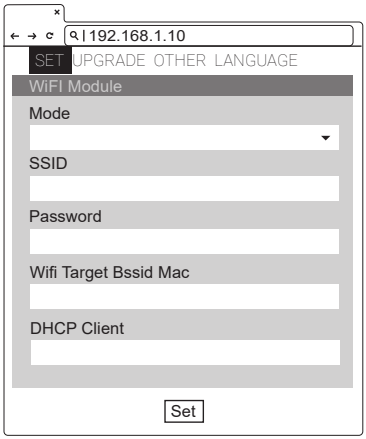


Figure 4-6. SSID and Password

Wi-Fi Setting	Description
Mode	Enable(station) or disable or set as AP mode
SSID	Service Set Identifier SSID
Password	Password to access to Wi-Fi
Wifi Target Bssid Mac	Fill in designated AP Mac if needed
DHCP Client	DHCP client of Wi-Fi



WARNING

Due to varying environmental conditions, a Wi-Fi and 3G/4G module network signal test should be conducted before installation. The RSSI (Received Signal Strength Indication) should be higher than -65dBm. A signal strength lower than that can cause network disconnection or poor network reception.

4.4 SIM Card Installation

1) Pull out the top tray from the CSU box to access the 4G/Wi-Fi module inside the cabinet. See following figure.

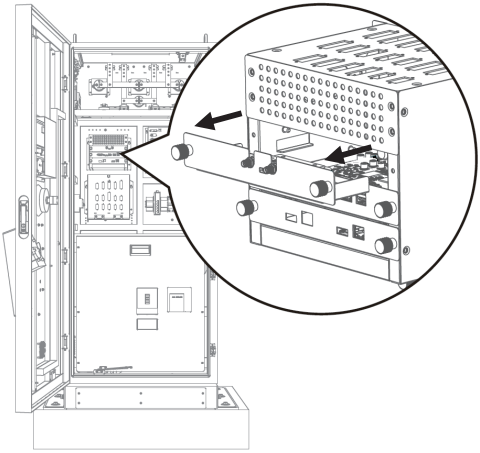


Figure 4-7. 4G/Wi-Fi Module Access

2) Insert a 3G/4G Micro SIM Card in the tray, ensure the gold contacts are facing down andthe notch is in the upper right corner. See following figure.

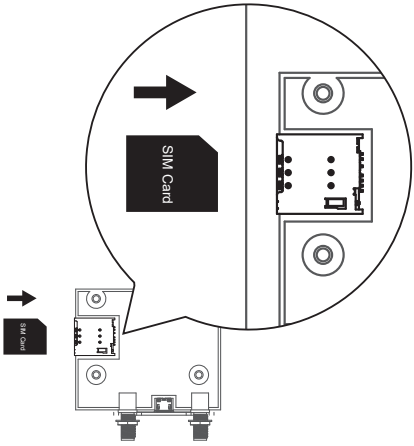


Figure 4-8. SIM Card Insertion

NOTE

Inserting the sim card wrong can cause damage.

4.5 3G/4G Network Setup

1) Contact your SIM provider and get the APN, PPP ID, and password.

NOTE

The PPID ID and password option may depend on your SIM provider.

2) Setup the laptop per 4.1, as needed.

3) Login to the EVSE per 4.2, as needed.

4) Select: SET | Network | 3G/4G. See following figure.

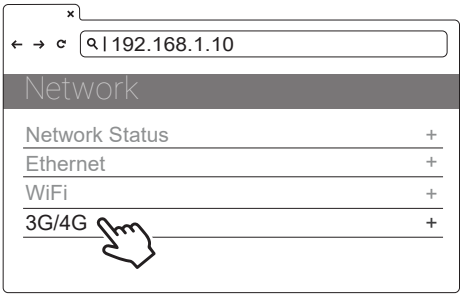


Figure 4-9. Network Select

5) Fill in the APN, Chap Pap Id, and Chap Pap Pwd information. See following figure.

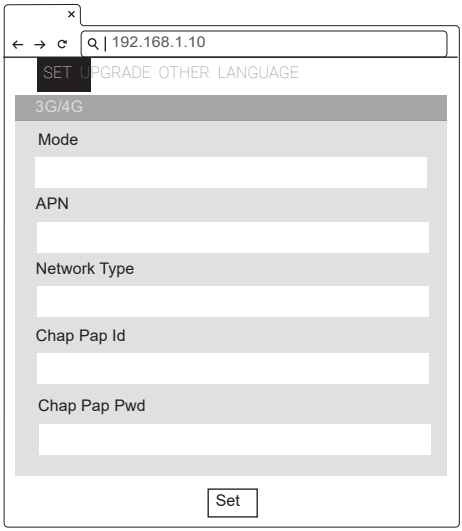


Figure 4-10. Network Information

6) Ensure the 3G/4G network activates.

4.6 Time Settings

Automatic setting:

The time will be adjusted automatically when the EVSE connects to the internet.

Possible time servers:

- time.windows.com
- cn.ntp.org.cn
- tock.stdtime.gov.tw

NOTE

Firewall and network environment may influence the time server connection.

Manual setting

1) Setup the laptop per 4.1, as needed.

2) Login to the EVSE per 4.2, as needed.

3) Select: SET | Network | System Information | System DateTime. See following figure.

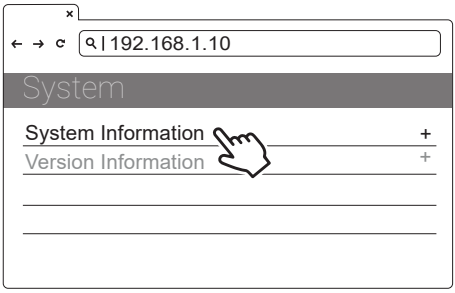


Figure 4-11. Date and Time Information

4) Select the calendar button on the right ot set the current date and time. See following figure.

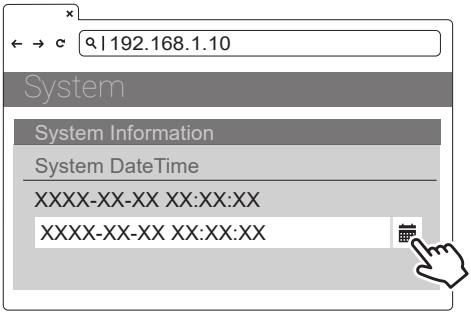


Figure 4-12. Select Date/Time

5) Select SET and wait until the setting completion window appears. See following figure.

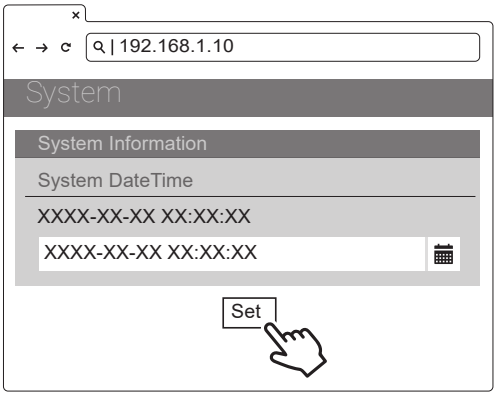


Figure 4-13. Set Date/Time

5. Installation Inspection and Commissioning

5.1 Environmental Check

Item	Status	Remark
Ambient Temperature		
Ambient Humidity		
Sunshade		Recommended but not required.
Rain Canopy		Recommended for better charging experience and maintenance on rainy day.
Installation Altitude		<= 2000m (6560 ft)
Air Circulation / Drafty		
Dust Level		
Anti-Vandalism Measures		

5.2 External Infrastructure Readiness and Check

Item	Status	Remark
Input Wirings and Terminals		Type / Length / Cross Section
Key and Lock of Cabinet Door		
Fixing Screws		Type / No.
MCCB (Moulded Case Circuit Breaker)		Current rating of MCCB shall be higher than or equal to 300A, 4 Port (for L1, L2, L3, N wire)
Input Electricity Capacity		
Input Electricity Configuration		Wye
Grounding Resistance		<10Ω
Grounding System		TN-S/TT
Grid Voltage and Frequency		

5.3 EVSE Check - Power On



WARNING

Improper connection of the EVSE grounding conductor can result in a risk of electric shock.

Ensure the EVSE is properly grounded prior to energizing.

Item	Status	Remark
Power On		
Screen On		
Acoustic Noise		
Screen Display & Function		
Time Display Correctly		
Network Connection Quality		
Cooling Fans Operation & Noise		
LED Status Indication		
EVSE Setting		
Function of Engineer Mode		
Version of H.W. & F.W.		
Remote Control & Monitoring		
Backend Server Connection		
Network Connectino & Quality		Wi-Fi, 3G/4G > -65dBm

5.4 EVSE Check - Charging

Item	Status	Remark
User Authorization - RFID		
User Authorization - QR Code		
User Authorization - Others		
Waiting Time of Connection Check		
Reading of Each Display Item		
Full Charge Test		Temperature Readings
Function of Electronic Lock		
Reading of Engineer Mode		
Airflow & Noise of Cooling Fan		
Charging Record (log) Upload		
Remote Control & Monitoring		

5.5 EVSE Check - System Power Override

Item	Status	Remark
Emergency Stop Button & Recovery		Set the rated load state and push the emergency stop button. Ensure following items: 1. The charger stops charging and the alarm sounds. 2. When the button is released and the DC connector is detached, the EVSE returns to the standby status.
Tilt sensor and Door Open sensor trigger & Recovery		Push the self test button. 1. Ensure the upstream circuit breaker is cut off.

Appendix A - Package List

Item	Description	Quantity	Unit	Remark
1	EVSE	1	SET	
2	User manual	1	PC	
3	EVSE Approved certificate	1	PC	
4	OQC Report	1	PC	
5	RFID Card	2	PCS	
6	Door Key	2	PCS	
7	Base cover	4	PCS	
8	M4x12 screw	22	PCS	
9	Breaker Lock	1	SET	
10	Waterproof Plastic Bolts	4	PCS	
A	Cable Management	1	SET	Optional
B	Screws for R/S/T/N busbars	1	KIT	

Appendix B - Torque Requirements Table

Screw in Metric				
Screw size	**Screw type**	**Steel (inch·lbs)**	**Steel (kgf·cm)**	**Aluminum and Copper (kgf·cm)**
M2×0.4	Machine	3.75 ±0.75	4 ±1	3.75 ±0.75
M3×0.5	Machine	7 ±1	9 ±1	7 ±1
M3.5×0.6	Machine	10 ±2	12 ±2	10 ±2
M4×0.7	Machine	15 ±2	18 ±3	14 ±2
M5×0.8	Machine	30 ±4	35 ±4	28 ±4
M6×1.0	Machine	50 ±5	60 ±5	45 ±4
M6×1.0	Hex cap	100 ±15	110 ±10	90 ±10
M8×1.25	Machine	120 ±17	140 ±20	110 ±10
M8×1.25	Hex cap	240 ±30	270 ±30	220 ±30
M10×1.5	Hex cap	300 ±80	360 ±50	270 ±30
M12×1.75	Hex cap	470 ±90	600 ±100	460 ±80

Screw in Metric				
Screw size	**Screw type**	**Steel (inch·lbs)**	**Steel (kgf·cm)**	**Aluminum and Copper (kgf·cm)**
2-56	Machine	1.75 ±0.25	2 ±0.3	1.5 ±0.2
4-40	Machine	3.5 ±0.5	4 ±0.5	3 ±0.5
6-32	Machine	8 ±2	10 ±1	7 ±2
8-32	Machine	12±2	15 ±2	12 ±2
10-32	Machine	20 ±4	25 ±3	18 ±3
1/4-20	Machine	40 ±5	45 ±5	35 ±3
1/4-20	Hex cap	65 ±5	75 ±10	60 ±5
5/16-18	Hex cap	135 ±15	155 ±15	125 ±15
3/8-16	Hex cap	240 ±30	275 ±25	210 ±20
7/16-14	Hex cap	390 ±56	450 ±50	360 ±40
1/2-13	Hex cap	600 ±80	700 ±80	550 ±70

Appendix C - Preventive Maintenance Check List

No.	Item	Description	0.5 year	1st year	2nd year	3rd year	4th year	5th year
1	Preventive maintenance		I	I	I	I	I	I
2	Appearance inspection	Appearance visual inspection	I	I	I	I	I	I
3	System fan	Fan clean and spinning smoothly check	I	I	I	R	I	I
4	Air filter	Air filter, air inlet and outlet clean	I	I	R	I	R	I
5	Charging cable	Appearance clean	I	I	I	R	I	I
6	PCBA	Visible section clean	--	I	I	I	I	R
7	SPD	SPD status indication check	I	I	I	I	I	R
8	DC output bolts torque	Bolts torque check	--	I	I	I	I	I
9	AC input bolts torque	Bolts torque check	--	I	I	I	I	I
10	LCD display	Display sharpness and back-light check	--	I	I	I	I	R
11	Selection button	Indication light and function check	--	I	I	I	I	R
12	RFID reader	Function check	--	I	I	I	I	R
13	Emergency stop button	Function check	--	I	I	I	I	R
14	Breaker and RCD	Function check	--	I	I	I	I	R
15	Aux power supply	No maintenance requirement	--	--	--	--	--	R
16	PSU module	Not applicable for Dispenser	--	--	--	--	--	R
17	Coolant level	Level inspection or refilling	I	I	I	I	I	I

Note

Depending on the environment, user may decide the timing of parts replacement.

I: Inspection recommended

R: Replacement or refill recommended

--: No maintenance needed recommended

NOTE

Manufacturer Contact Info Sticker