

48A AC L2 EVSE (POS)

Installation Manual

Revision 0.1



IMPORTANT SAFETY INSTRUCTIONS

INSTRUCTIONS IMPORTANTES CONCERNANT LA SÉCURITÉ

This document contains instructions and warnings that must be followed when installing and using the Electric Vehicle Supply Equipment (EVSE). Be sure to review all **WARNINGS** and **CAUTION** markings before proceeding with installation or use of the EVSE to avoid hazards.

Safety Instructions

The below symbols signify a **WARNING** or **CAUTION** and should be acknowledged immediately.



WARNING: RISK OF ELECTRIC SHOCK



WARNING: RISK OF PERSONAL INJURY



WARNING: RISK OF FIRE OR EXPLOSION



CAUTION: RISK OF DAMAGE TO THE EQUIPMENT

- The information provided in this manual in no way exempts the user of responsibility from following all applicable codes or safety standards.
- This document provides instructions for the Electric Vehicle Supply Equipment (EVSE) and should not be used for any other product.

Repair and Maintenance Clause

- Only licensed electricians can repair or maintain the charger as it is forbidden for general users to repair or maintain it.
- Input power must be turned off before any repair or maintenance is performed.



WARNING: RISK OF ELECTRIC SHOCK

Basic precautions should always be followed when using electrical products, including the following. This manual contains important instructions that shall be followed during installation, operation and maintenance of the unit.

- Read all the instructions before using this equipment.
- This equipment should be supervised when used around children.
- Do not put fingers into the EV connector.
- Do not use this equipment if the flexible power cord or EV cable is frayed, has broken insulation, or any other signs of damage.
- Do not use this equipment if the enclosure or the EV connector is broken, cracked, open, or shows any other indication of damage.



WARNING: RISK OF PERSONAL INJURY

- This equipment is intended only for charging vehicles that do not require ventilation during charging.
- Do not use extender cables to increase the length of the charging cable. Maximum length is limited to 25 feet by the National Fire Protection Agency.



WARNING: RISK OF ELECTRIC SHOCK

- Do not touch live electrical parts. Incorrect connections may cause electric shock.
- Do not remove cover or attempt to open the enclosure. No user serviceable parts inside. Refer servicing to qualified service personnel.



CAUTION: RISK OF DAMAGE TO THE EQUIPMENT

- Do not operate this equipment in temperatures outside its operating range of -30°C to +50°C (-22°F to +122°F).
- Store this equipment in a clean dry place in temperatures between -40°C and +80°C (-40°F to +176°F).
- Do not connect to a circuit operating at more than 150 volts to ground.



WARNING: RISK OF FIRE OR EXPLOSION

- Do not use this device with an extension cord.
- To reduce the risk of fire, replace only with same type and ratings of fuse.

SAVE THESE INSTRUCTIONS
CONSERVER CES INSTRUCTIONS

Federal Communication Commission Interference Statement

This equipment complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This equipment may not cause harmful interference, and (2) this equipment must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not covered in this guide must be approved in writing by the manufacturer's Regulatory Engineering Department. Changes or modifications made without written approval may void the user's authority to operate this equipment.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator & your body.

Industry Canada Statement

This equipment contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: (1) This equipment may not cause interference. (2) This equipment must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) L'appareil ne doit pas produire de brouillage; (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Radiation Exposure Statement

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator & your body.

Déclaration D'exposition Aux Radiations

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps.

Contents

1	Introduction	9
1.1	Product View	9
2	Specification	13
2.1	Product Specifications	13
3	Installation	15
3.1	Before Installation	15
3.1.1	Safety Check	15
3.1.2	Grounding Instructions	15
3.2	Tools & Parts Required for Installation	16
3.3	Charger Installation	17
3.4	Input Power Cord Installation	22
3.5	Holster Installation	25
3.6	Operating Current	28
3.7	Service Wiring	29
3.7.1	240V Split-Phase	29
3.7.2	208V 3-Phase Wye-Connected	29
3.7.3	240V Three-Phase Delta-Connected	30
4	Operations	32
4.1	Charging Status Indicators	32
4.2	Authorization	33
4.2.1	Online Authorization	33
4.2.2	Local Authorization	33
4.3	Charging an Electric Vehicle (EV)	33
4.3.1	Plug and Charge	33
4.3.2	RFID or Credit Card (for SC+ and IC only)	34
4.4	Stop Charging	34
4.4.1	Interrupt Charging	34
4.4.2	Auto Restart	34
4.4.3	Power Outage Recovery	35

4.5 General Care	35
4.6 Customer Support	35

List of Figures

Figure 1-1 Front View	9
Figure 1-2 Box Contents	10
Figure 1-3 Opening the Carton.....	11
Figure 1-4 Charger Device	11
Figure 1-5 Take Out the Charger.....	12
Figure 1-6 Remove the Mounting Bracket	12
Figure 3-1 Loosen 2 Pcs M4 Screw.....	17
Figure 3-2 Remove the Top Cover Manually.....	17
Figure 3-3 Loosen 4 Pcs M4 Screw Then Open Install Cover	18
Figure 3-4 Position of SIM Card Socket	19
Figure 3-5 SIM Card Insert / Eject Direction.....	19
Figure 3-6 Fasten Mounting Bracket	20
Figure 3-7 Screw Holes of Mounting Bracket.....	20
Figure 3-8 Charger and Mounting Bracket.....	21
Figure 3-9 Tighten M6 Screw	22
Figure 3-10 Conduit	22
Figure 3-11 Copper Terminal, Heat Shrink Tube and Copper Wire	23
Figure 3-12 Cable Input Position	23
Figure 3-13 Input Wiring Position	24
Figure 3-14 Separate the Holster	25
Figure 3-15 Secure the Hook	25
Figure 3-16 Secure the Holster	26
Figure 3-17 Rotate the Holster.....	26
Figure 3-18 Tighten Screws27Figure the EV Charging Plug into the Holster	3-19 27
Figure 3-20 Split-Phase	29
Figure 3-21 208V 3-Phase Wye-Connected.....	30
Figure 3-22 240V 3-Phase Delta-Connected	31
Figure 4-1 Online Authorization.....	33
Figure 4-2 Local Authorization	33
Figure 4-3 Connect the Charging Plug to the EV.....	34

List of Tables

Table 1-1 Accessories in the Box.....	10
Table 2-1 Product Specifications.....	13
Table 3-1 Tools & Parts Required for Installation.....	16
Table 3-2 DIP Switch Configuration	28
Table 4-1 Charging status indicators	32

1 Introduction

This user manual applies to “48A Level 2 AC Charger for Plug-in Electric Vehicles (PEVs) and Battery Electric Vehicles (BEVs)”.

The Level 2 Electric Vehicle Supply Equipment (EVSE) with 48A capabilities will be used in North America. It can provide a shorter charging time than the 16A and 32A EVSE.

**** Any unauthorized modifications will void the manufacturer's warranty ****

1.1 Product View



Figure 1-1 Front View

Box Contents

Inside the box, you will find the following accessories.

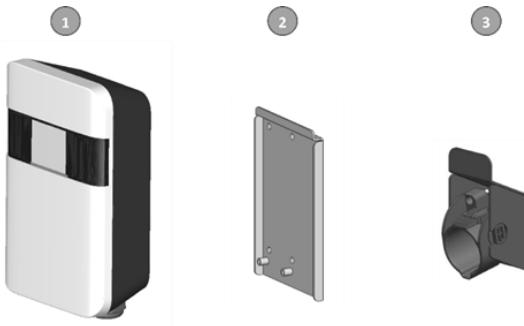


Figure 1-2 Box Contents

Table 1-1 Accessories in the Box

Item	Description	QTY	Remark
1	Smart+&POS(SC+)/Intelligent&P OS(IC) Charger-48A	1	Depending on your order content
2	Mounting Bracket	1	Attached to the back of the charger
3	Holster Assembly	1	With Hook x1, Holster x1, M4xL15 tapping screw x2

Carton Opening Process

1. Open the carton and remove the EPE Form.

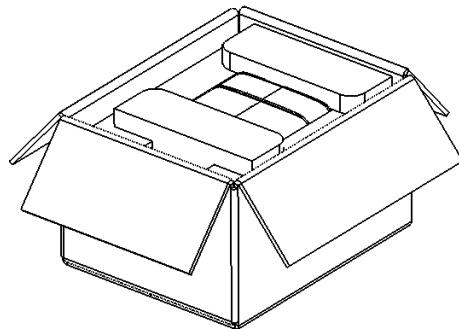


Figure 1-3 Opening the Carton

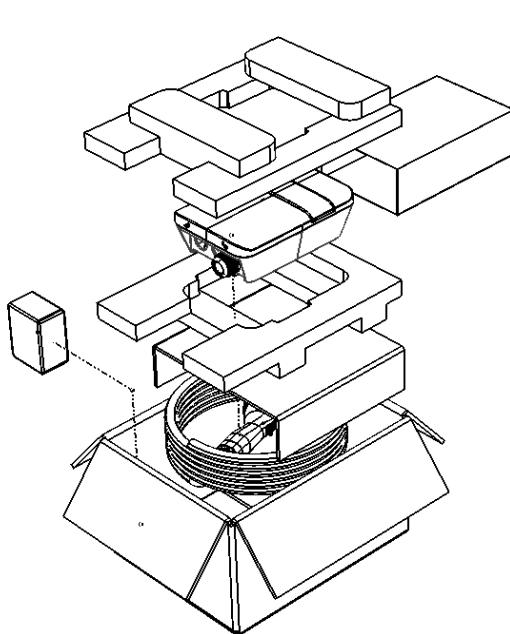


Figure 1-4 Charger Device

2. Take out the charger and then remove the mounting bracket before installing it.

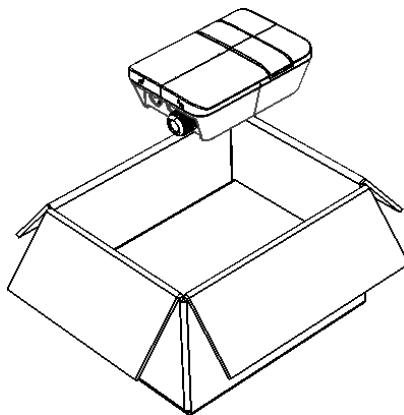


Figure 1-5 Take Out the Charger

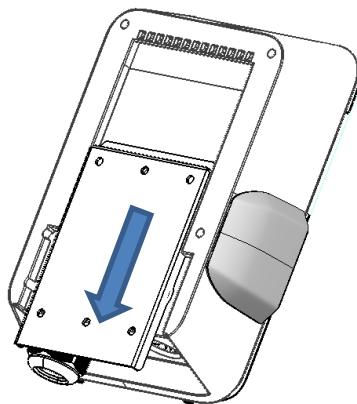


Figure 1-6 Remove the Mounting Bracket

2 Specification

2.1 Product Specifications

Table 2-1 Product Specifications

Item	SC+_48A	IC_48A
Application	Commercial	
Voltage (Vac)	208/240VAC (-20% ~ + 15%), Single Phase	
Frequency (Hz)	60Hz	
Current (Rms)	Max. 48 A	
Charging Connector	SAE J1772 Type 1	
Wi-Fi	IEEE 802.11 b/g/n /ac	
Ethernet	YES	
Bluetooth	YES	
Cellular	N/A	M2M connection (LTE CAT1)
Payment Contactless(NFC) Features	ISO18092(NFCIP-1) Active P2P ISO14443 A, B FeliCa™	
Payment ICC Contact Card Features	Credit Card EMV CTLS L1	
Display	3.5" LCD Display with 550 nits luminance	
Data Protocol	OCPP 1.6 & 2.0 JSON	
Operation Temp.	-30 ~ 50 °C (-22 to 122°F)	
Storage Temp.	-40 ~ 80 °C (-40 to 176°F)	
Mounting Type	Wall mount / Pole mount (optional)	
Wiring Type	Hard-wired	
Enclosure Level	NEMA 4	
Impact Resistance	IK10	
Dimension (H x W x D)	208 x 300 x 97 mm	
Web Portal Management	Yes	
Operating Humidity	5% to 95%, non-condensing	

Operating Altitude	0 to 3500m	
Certification	UL 1998/2231/2594 FCC Part 15B/Energy Star	
	FCC Part 15.225 (RFID 13.56MHz) FCC Part 15.247 (WLAN 2.4GHz)	
	N/A	FCC Part 22/24/27
	CTEP	
Energy Star	Yes	

3 Installation

3.1 Before Installation

3.1.1 Safety Check

- Check for transport damage.
- Before connecting the product to the power supply, check that the power supply voltage and current rating corresponds with the power supply details shown on the product rating label.



CAUTION

- Disconnect the power supply before installing or repairing the charger. Failure to do so may result in physical injury or damage to the power supply system and the charger.
- Avoid touching or pressing the LCD screen at all times, as this may result in damage to the LCD screen.
- Cord extension sets cannot be used in any case.



DANGER: RISK OF SUFFOCATION

Keep any packing materials away from children – these materials are potential source of danger, e.g. suffocation.

The charger must be installed only by a licensed electrician in accordance with the provisions of the local electrical industry construction and should comply with National Electrical Codes and standards.

Before installing the charger, make sure you have read all these instructions in this manual and fully understand its contents.

Appropriate protection is required when connecting to a main switchboard. The tools and parts required for installation are outlined in the section 3.2 “Tools & parts required for installation”.

3.1.2 Grounding Instructions

The charger must have equipment grounding through a permanent wiring system or an equipment grounding conductor. Use a wire with a dedicated grounding wire and a ring terminal and connect to the equipment ground terminal block for grounding.

This 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.



WARNING: RISK OF ELECTRIC SHOCK

Improper connection of the equipment grounding conductor can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly grounded.

3.2 Tools & Parts Required for Installation

Table 3-1 Tools & Parts Required for Installation

Tool	QTY	Model	Size	Remark
Mounting Bracket	1	All	222x173x9 mm	Fasten charger to the wall
Holster Assembly	1	All	58x58x70 mm	Hold EV charging plug
Screw	4	All	Tapping: #12	Fasten Mounting Bracket & Holster
			Mechanical: M6	
	2	All	Mechanical: M4	Fasten charger & Mount Bracket
Wire, Copper	2	All	4 AWG	
	1	All	10 AWG	
Heat Shrink Tube	2	All	4 AWG	Protect wires & terminals
	1	All	10 AWG	
Terminal	2	All	4 AWG	Connect input wires to the terminal block
	1	All	10 AWG	
Conduit	1	All	1 inch	Protect power cable
Philips Screwdriver	1	All	PH2	
Torx Screwdriver	1	All	T20	
Hexagon Socket	1	All	5/16	Tighten #12 Tapping screws
Torque Wrench	1	All	40 kgf-cm min	

3.3 Charger Installation

1. Disassemble top cover.



Figure 3-1 Loosen 2 Pcs M4 Screw



Figure 3-2 Remove the Top Cover Manually

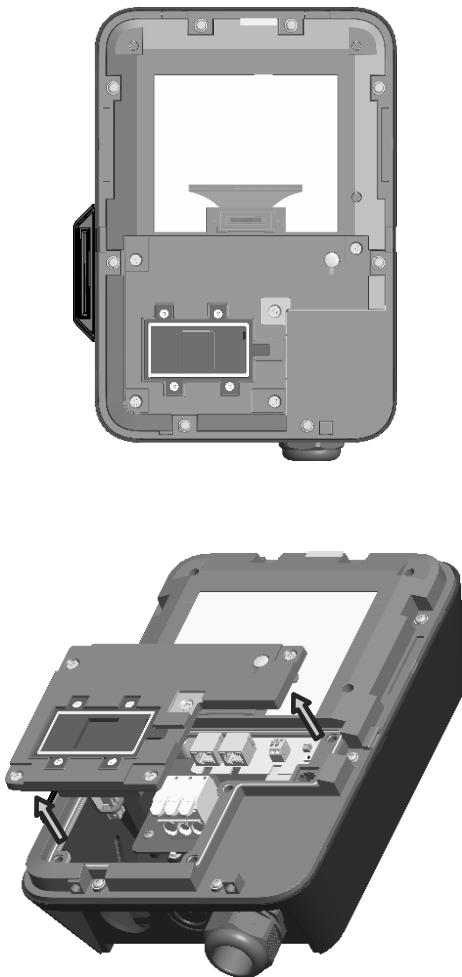


Figure 3-3 Loosen 4 Pcs M4 Screw Then Open Install Cover

2. Locate SIM card socket. (Only for Intelligent Charger)

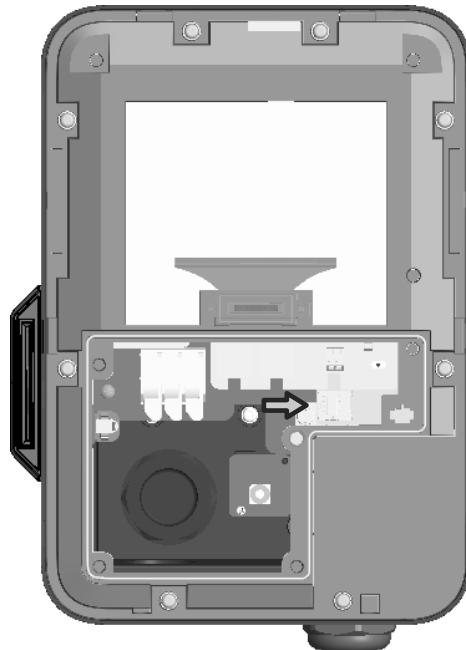


Figure 3-4 Position of SIM Card Socket

3. Insert SIM card. (Only for Intelligent Charger)

Step 1: Unlock the SIM card socket.

Step 2: Insert or eject the SIM card by pushing the card into the SIM slot.

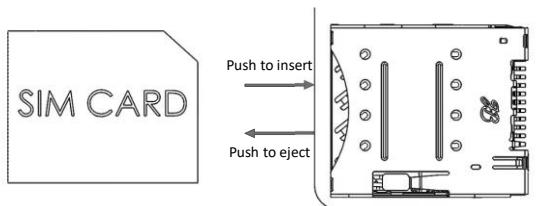


Figure 3-5 SIM Card Insert / Eject Direction

4. Secure the main body mounting bracket to the wall with appropriate screw.

Follow applicable accessibility requirements for the mounting position. The unit should be stored or located at a sufficient height.

For indoor sites, this device shall be mounted at a sufficient height from grade such that the height of the storage means for the coupling device is located between 450 mm (18 inches) and 1.2 m (4 feet) from grade.

For outdoor sites, this device shall be mounted at a sufficient height from grade such that the height of the storage means for the coupling device is located between 600 mm (24 inches) and 1.2 m (4 feet) from grade. Refer to Article 625, NEC.

The mounting bracket has a total of ten screw holes. If only two screws are to be used to fasten the mounting bracket, the screws should pass through the middle two screw holes of the mounting bracket. The remaining screw holes are reserved for the user.

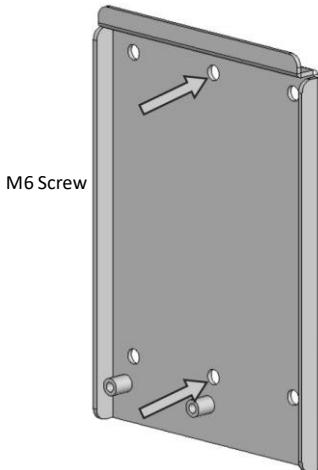


Figure 3-6 Fasten Mounting Bracket

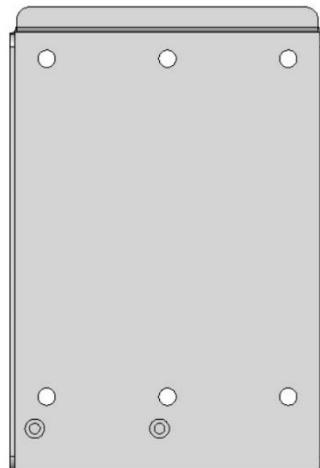


Figure 3-7 Screw Holes of Mounting Bracket

Screw sizing suggestion:

- A. For masonry walls, use M6 mechanical screws. (Commercially Available)
- B. For finished walls supported by wood studs, use #12 tapping screws. (Model Accessories)

Note: Please refer to the following torque. The actual torque is according to the wall material.

Screw	Torque	
M6	25 kgf.cm min	21.7 lb-in min

Screw	Torque	
#12	25 kgf.cm min	21.7 lb-in min

5. Fasten charger onto mounting bracket.

Step 1: Put the charger on the mounting bracket.

Step 2: Fasten charger on mounting bracket by tightening M6 screw.

Note: Please refer to the following torque.

Screw	Torque	
M4	15 kgf.cm	12 lb/in

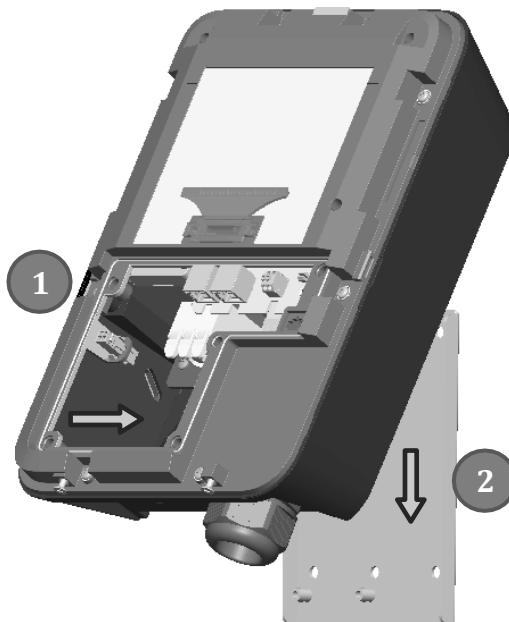


Figure 3-8 Charger and Mounting Bracket

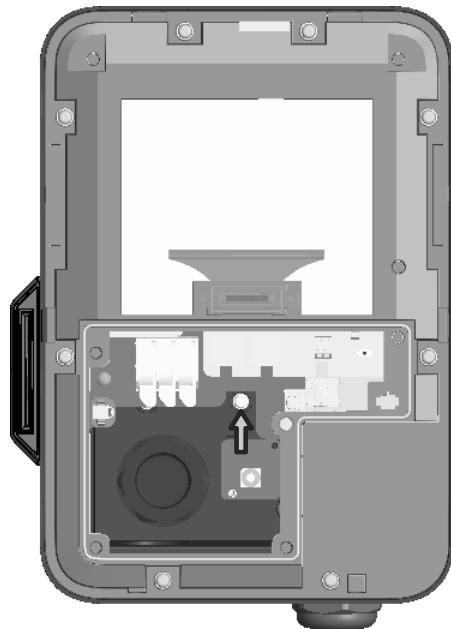


Figure 3-9 Tighten M6 Screw

3.4 Input Power Cord Installation

- 1. Choose the appropriate conduit in accordance with all applicable state, local and National Electrical Codes and standards.**

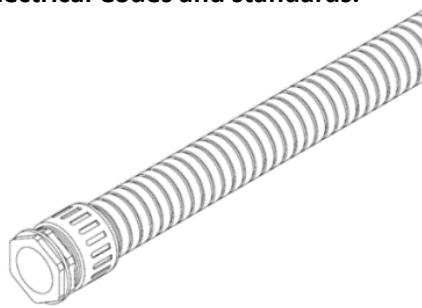


Figure 3-10 Conduit

2. Clamp the copper terminal to connect the copper wire. The clamp point is covered by a heat shrink tube for protection.

Note: Refer to the following wire specification. Use conductor type other than RHH, RHW and RHW-2 with outer covering.

Model	Terminal	Conductor	Rating
Basic(BC)/Smart(SC)/Smart+(SC+)/Intelligent(IC) Charger-48A	L1, L2, G	L1/L2: 4AWG G: 10 AWG	90C copper wire



Figure 3-11 Copper Terminal, Heat Shrink Tube and Copper Wire

3. Electrical wiring to the charger.

Step 1: Fold the wire end to pass through the conduit and insert them into the input hole (choose input direction 1 or 2 and open cap).

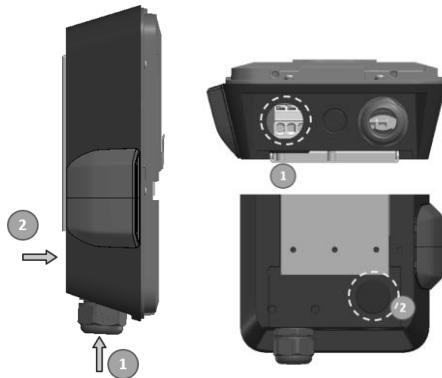


Figure 3-12 Cable Input Position

Step 2: Fasten the copper wire on the corresponding terminal block. The wiring instruction is printed in front of the terminal block (L1/L2/G).

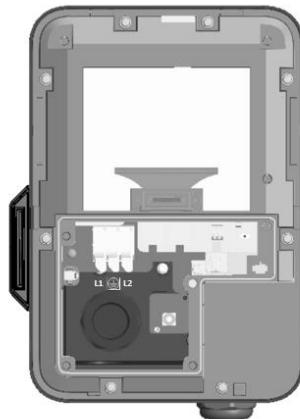


Figure 3-13 Input Wiring Position

Step 3: Use the following torque to connect the wire terminal to the terminal block.

Screw	Torque	
M4	12.1 kgf.cm	10.5 lb-in



CAUTION:

To reduce the risk of fire, connect only to a circuit provided with 60 amperes maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70, and the Canadian Electrical Code, Part I, C22.2.



CAUTION:

If this unit is installed outdoors, the outlet must be rated for outdoor installation. The outlet must be installed properly to maintain the proper NEMA rating of the enclosure.

Step 4: Lock the conduit on the enclosure. Please refer to the following torque.

Conduit	Torque	
1 "	35 kgf.cm	30.36 lb-in

Step 5: Reassemble Install cover and Front cover then Fasten M4 screw.

Screw	Torque	
M4	15 kgf.cm	12 lb-in

3.5 Holster Installation

1. Separate the holster from the hook.

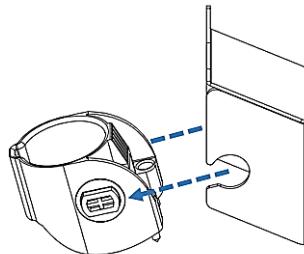


Figure 3-14 Separate the Holster

2. Fasten the hook on the wall with appropriate screws.

- 2-1. For finished walls supported by wood studs, use 2pcs screws (#12 tapping or M6) .
- 2-2. The recommended torque is 25 kgf.cm (21.7 lb-in).

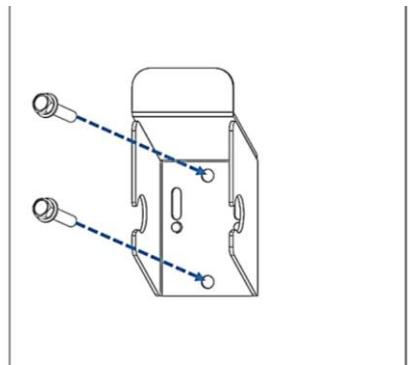


Figure 3-15 Secure the Hook

5. 3. Rotate the holster upward and latch it to the installed hook.

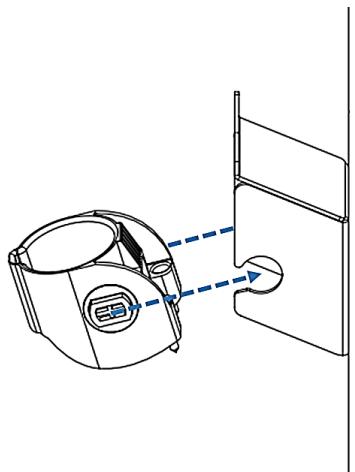


Figure 3-16 Secure the Holster

4. Rotate the holster down completely.

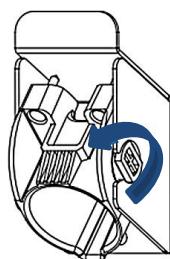


Figure 3-17 Rotate the Holster

5. Keep the holster facing downward and tighten screws completely in this position.

5-1. The recommended torque is 6 kgf.cm (5.2 lb-in). The screws prevent the holster from being disconnected from the mounting hook.

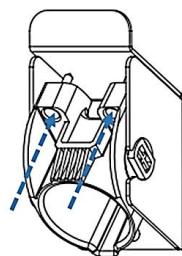


Figure 3-18 Tighten Screws

6. Place the EV charging plug into the holster.

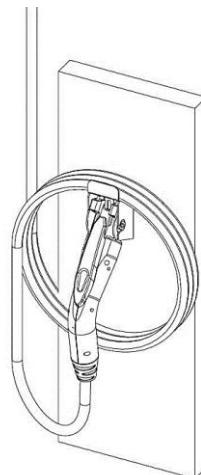


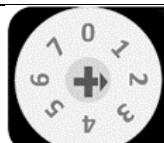
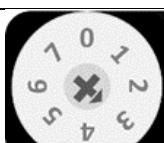
Figure 3-19 Place the EV Charging Plug into the Holster

3.6 Operating Current

To set the operating current, please configure 0-7 from selector switch.

WARNING: Power must remain off before setting or configuring the selector switch.

Table 3-2 Selector Switch Configuration

Item	Output current	Circuit Breaker	Specification
Selector switch configuration	12A	15A	
	16A	20A	
	20A	25A	
	24A	30A	
	32A	40A	
	36A	45A	

	40A	50A	
	48A (Default)	60A	

3.7 Service Wiring

3.7.1 240V Split-Phase

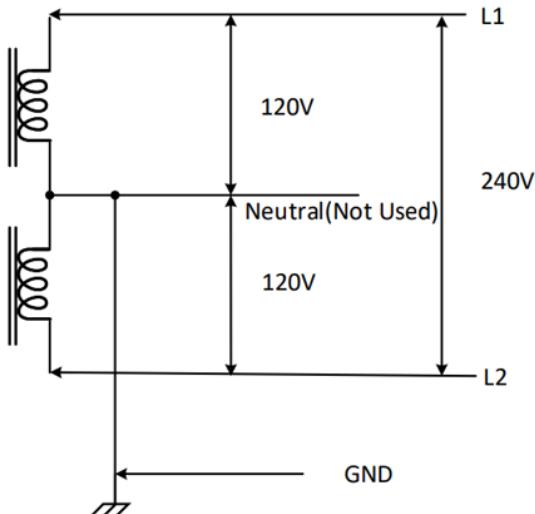


Figure 3-20 Split-Phase

3.7.2 208V 3-Phase Wye-Connected

With a Wye-connected secondary, any two of the legs can be used to provide 208V to the Wall Connector. For example, L1 and L2, or L1 and L3, or L2 and L3. The two used phases must each measure 120V to neutral.

Note: A current-carrying neutral is not required.

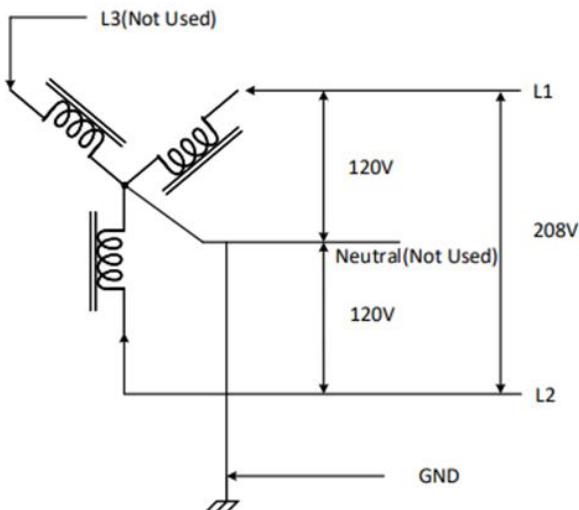


Figure 3-21 208V 3-Phase Wye-Connected

Caution: The unused leg (L3 in the illustration) must remain open. Do not connect to a neutral bar, or to earth ground.

Caution: The center point of the three phases (normally used as neutral) must be grounded to earth at only one point. This is usually at the breaker panel.

3.7.3 240V Three-Phase Delta-Connected

With the delta connection, one leg must be center tapped, and only the two phases on either side of the center tap can be used. The two used phases must each measure 120V to neutral.

Consult the transformer manufacturer's literature to verify that the single leg can supply the required power.

Note: The Wall Connector's contactor closes only if it detects the presence of an earth ground wire connected to a neutral point on the transformer secondary.

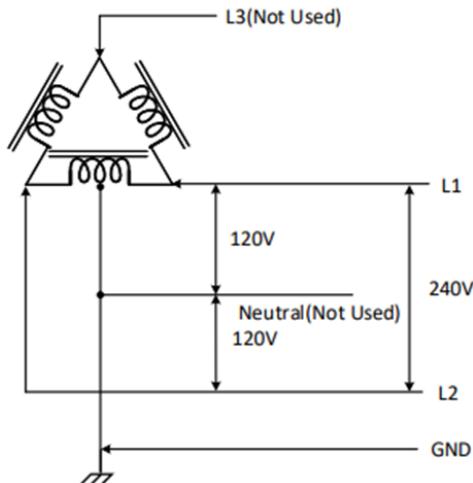


Figure 3-22 240V 3-Phase Delta-Connected

Caution: The third line (L3 in the illustration) of the delta is 208V, with respect to neutral, and is sometimes referred to as a "stinger." Do not use this third line.

Caution: Do not use a three-phase delta-connected transformer secondary without a center tap on one leg. No neutral point is available for the required earth ground connection.

4 Operations

4.1 Charging Status Indicators

Table 4-1 Charging Status Indicators

LED Indicator	Description	Definition
	Not Illuminated	Power Off
	Green Steady	Ready
	Green Flashing	Flashing green (Fast): Authorized, and while finishing charging Flashing green (Slow): Suspend EV
	Blue Flashing	Flashing blue: Charging
	Red Steady	Unrecoverable Fault
	Red Flashing	Recoverable Fault
	Yellow Steady	Unavailable
	Yellow Flashing	Booting
	Orange Flashing	Firmware Upgrading
	Purple Steady	Reserved

4.2 Authorization

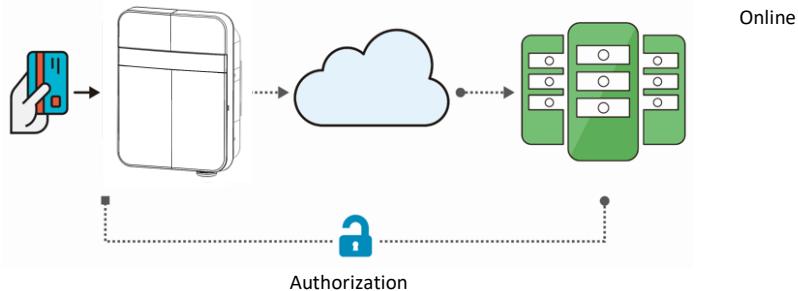
Before the owner of an Electric Vehicle can start or stop charging, the user must be authorized to continue with the operation.

4.2.1 Online Authorization

Description:

- The EVSE will only supply energy after authorization.
-

Figure 4-1



4.2.2 Local Authorization

Description:

- Synchronized with the Central System when EVSE is Online.
- To improve the experience for users, the EVSE MAY support local authorization when EVSE is *offline*.

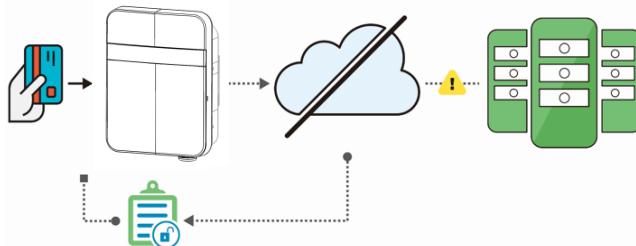


Figure 4-2 Local Authorization

4.3 Charging an Electric Vehicle (EV)

There are two different ways to initiate a charging session: Plug and Charge and RFID Card.

4.3.1 Plug and Charge

1. Insert the charging plug into the EV
2. Charging session starts



Figure 4-3 Connect the Charging Plug to the EV

4.3.2 RFID or Credit Card (for SC+ and IC only)

1. Insert the charging plug into the EV
2. Swipe or tap the card
3. Allow for authorization to complete
4. Charging session starts

4.4 Stop Charging

1. There are two different ways to stop a charging session: Unplug at any time (disconnect the charging plug from the EV to stop charging session)

4.4.1 Interrupt Charging

Please refer to STOP CHARGING section for more information.

4.4.2 Auto Restart

When a charging session is interrupted due to a temporary error condition, the charger will automatically restart charging when the cause of the temporary error condition returns to normal. Status indicator lights remain flashing RED until the error condition is resolved.

- Temporary error conditions included: Over Current, Over Voltage, Under Voltage, and Over Temperature.

- For Over Current conditions: The charging session will be stopped while overcurrent (OC) occurs. After recovery from OC for 30 seconds, the charger will automatically attempt to restart charging up to 3 times.
- When charging session stopped due to CCID trip, the charger will attempt to restart after 15 minutes up to 3 times.

4.4.3 Power Outage Recovery

When power resumes after an outage, the charger restarts automatically with a delay ranging from 120 to 720 seconds. The delay is designed to avoid impacting the utility grid when multiple chargers are in the same area attempting to resume charging simultaneously.

4.5 General Care

The exterior of the charger is designed to be waterproof and dust proof. To ensure proper maintenance of the charger, follow these guidelines:

- Despite the water resistance of the enclosure, it is preferred to not direct streams of water at the unit. When cleaning it, clean with a soft, damp cloth.
- Make sure the charging plug is put back in the holster after charging to avoid damage.
- Ensure the power cable is stored on the charger after use to avoid damage.
- If the power cable or the charging plug is damaged, please contact Customer Support.

4.6 Customer Support

Please contact your reseller directly for technical support.