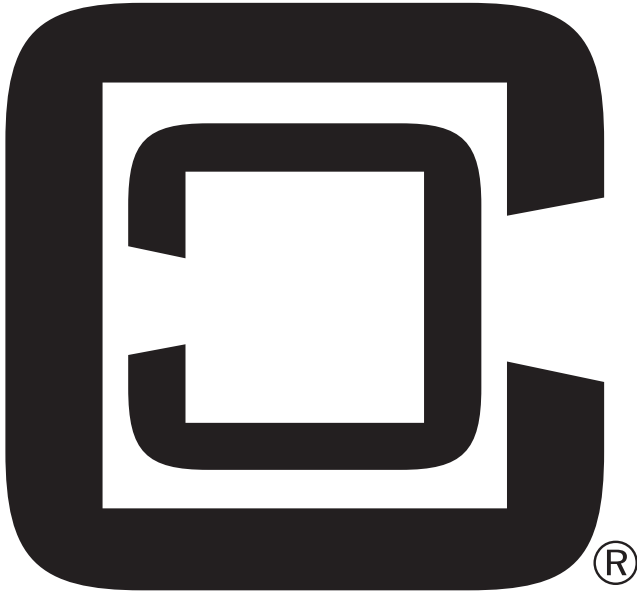


CLIPPERCREEK

A division of Enphase Energy, Inc.



User Manual



Model CS-100

(programmed for 80A continuous)

PLEASE NOTE

This user manual includes the latest information at the time of printing. Enphase Energy, Inc. reserves the right to make changes to this product without further notice. Changes or modifications to this product by other than an authorized service facility may void the product warranty.

Contact a Customer Service Representative with any questions about the use of this product. (877) 694-4194



WARNING: This product can expose you to chemicals, including Carbon Black, which is known to the State of California to cause cancer. For more information go to: www.P65Warnings.ca.gov



AVERTISSEMENT: Ce produit peut vous exposer à des agents chimiques, y compris Noir Carbone, identifiés par l'État de Californie comme pouvant causer le cancer. Pour de plus amples informations, prière de consulter: www.P65Warnings.ca.gov



ADVERTENCIA: Este producto puede exponerte a químicos, incluso Negro Carbón, que se conocido por el Estado de California como causante de cáncer. Para más información visite: www.P65Warnings.ca.gov

To view the latest version of this manual please visit clippercreek.com/installation-manuals

CS-100_DLP_80A User Manual Version 4, March 2022

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IMPORTANT SAFETY INSTRUCTIONS

Carefully read these instructions and the charging instructions in your vehicle owner's handbook before charging an electric vehicle.

The following symbols may be found in this manual or on labels affixed to the EVSE:

NOTE *This means pay particular attention.* Notes contain helpful suggestions.

NOTE *Cela signifie accorder une attention particulière.* Les remarques contiennent des suggestions utiles.



CAUTION: *This symbol means be careful.* There is potential of doing something that might result in damage to the equipment.



ATTENTION: *Ce symbole signifie être prudent.* Vous êtes capable de faire quelque chose qui pourrait causer des dommages à l'équipement.



WARNING: *This symbol means danger.* This is a situation that could cause bodily injury. Before working on any electrical equipment, be aware of the hazards involved with electrical circuitry and standard practices for preventing accidents.



AVERTISSEMENT: *Ce symbole signifie un danger.* Vous êtes dans une situation qui pourrait causer des blessures corporelles. Avant de travailler sur un équipement électrique, être conscient des dangers présentés par les circuits électriques et les pratiques courantes de prévention des accidents.

Instructions Pertaining to Risk of Fire or Electric Shock

When using the CS, basic electrical safety precautions should be followed:

- Use this EVSE to charge electric vehicles equipped with an *SAE J1772 charge port only*. Consult the vehicle owner's manual to determine if the vehicle is equipped with the correct charge port.
- Make certain the EVSE SAE J1772 cable is positioned so it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
- This product contains no user serviceable parts. Consult the Customer Support section in this manual for service information. Do not attempt to repair or service the EVSE.
- Do not operate the EVSE if it or the SAE J1772 charge cable is physically open, cracked, frayed, or otherwise visibly damaged. Contact a Service Representative for service immediately. Consult the Customer Support section in this manual for information on the Service Representative in the area.
- Not for use in commercial garages where a **COMMERCIAL GARAGE** is defined as a facility (or portion thereof) used for the repair of internal combustion vehicles in which the area may be classified due to flammable vapors being present (such as from gasoline).
- Do not place fingers inside of the coupler end of the SAE J1772 charge cable.
- Do not allow children to operate this device. Adult supervision is mandatory when children are in proximity to an EVSE that is in use.

Instructions Relatives au Risque d'Incendie ou de Choc Électrique

Lorsque l'utilisation de la CS, précautions fondamentale de sécurité électrique doivent être suivies:

- Utilisez cette EVSE pour charger les véhicules électriques équipés d'un SAE J1772 port de recharge seulement. Consultez le manuel du propriétaire du véhicule afin de déterminer si le véhicule est équipé d'un correcte port de recharge.
- Assurez-vous que le SAE J1772 câble de recharge sur la EVSE est positionné de telle sorte qu'il ne sera pas piétiné, accroché plus de, ou autrement endommagé ou de subir le stress.
- Ce produit ne contient aucune pièce réparable par l'utilisateur. Consultez la section Support à la Clientèle dans ce manuel pour obtenir des informations de service. N'essayez pas de réparer ou d'entretenir la EVSE vous-même.
- Ne faites pas fonctionner votre station ou le câble de recharge si elles sont physiquement ouverte, fissuré, effiloché, ou autrement visiblement endommagé. Contactez votre représentant du service pour service immédiatement. Consultez la section Support à la clientèle dans ce manuel pour obtenir des informations sur le représentant du service dans votre région.
- Ne pas utiliser dans les garages commerciaux où un garage commercial est défini comme une installation (ou une partie) utilisé pour la réparation de véhicules à combustion interne dans lequel la zone peut être classée en raison de vapeurs inflammables étant présents (Tels que de l'essence).
- Ne posez pas les doigts à l'intérieur de l'extrémité du SAE J1772 coupleur du câble de recharge.
- Ne pas laisser les enfants utiliser cet appareil. Supervision d'un adulte est obligatoire lorsque des enfants sont à proximité d'une EVSE qui est en cours d'utilisation.

ADDITIONAL SAFETY INFORMATION



WARNING: Turn off input power to the EVSE at the circuit breaker panel before servicing or cleaning the unit.



AVERTISSEMENT: Couper l'alimentation d'entrée à votre EVSE sur le panneau de disjoncteur avant de nettoyer ou de réparer l'appareil.

NOTE VENTILATION: Some electric vehicles require an external ventilation system to prevent the accumulation of hazardous or explosive gases when charging indoors. Consult the vehicle owner's manual to determine if the vehicle requires ventilation during indoor charging.

NOTE VENTILATION: Certains véhicules électriques nécessitent un système de ventilation externe pour éviter l'accumulation de gaz explosifs ou dangereux lors de la charge à l'intérieur. Consultez le manuel du propriétaire du véhicule pour déterminer si votre véhicule nécessite une ventilation quand le recharge en salle.

NOTE Vehicles which conform to the SAE-J1772 standard for communication can inform the EVSE that they require an exhaust fan. The EVSE is not equipped to control ventilation fans. Do not charge the EV with the EVSE if ventilation is required.

NOTE Véhicules qui sont conformes à la norme SAE-J1772 de communication peuvent informer la EVSE qu'ils nécessitent un ventilateur d'extraction. Le EVSE n'est pas équipé pour contrôler les ventilateurs. Ne chargez pas le véhicule avec les EVSE si la ventilation est nécessaire.



CAUTION: DO NOT CHARGE an EV indoors if it requires ventilation. Contact a Service Representative.



ATTENTION: NE PAS RECHARGER un véhicule à l'intérieur si il nécessite une ventilation. Contactez votre représentant de service pour plus d'informations.

**Save these instructions for future reference.
Conservez ces instructions pour référence future.**

FCC INFORMATION

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

This product has been designed to protect against Radio Frequency Interference (RFI). However there are some instances where high powered radio signals or nearby RF-producing equipment (such as digital phones, RF communications equipment, etc.) could affect operation.

If interference to the EVSE is suspected, we suggest the following steps be taken before consulting a ClipperCreek Sales and Service Representative for assistance:

1. Reorient or relocate nearby electrical appliances or equipment during charging.
2. Turn off nearby electrical appliances or equipment during charging.



CAUTION: Changes or modifications to this product by other than an authorized service facility may void FCC compliance.



ATTENTION: Modifications apportées à ce produit par qui conque autre qu'un centre de service autorisé peut annuler la conformité FCC.

OPERATION

The CS-100 is a conductive EVSE that provides the electric vehicle (EV) user with a safe and manageable link between the power grid and the electric vehicle.

Remove the charging connector from its holder, and plug it into the vehicle's charge port. If there is a mechanical latch that holds the connector firmly while charging, be sure the latch has "clicked" into place. Normally, the vehicle will immediately request a charge, the Green CHARGING light will come on, and charging will begin. After an average driving day, it will require a few hours to recharge completely. Charging overnight is the most convenient way to ensure the vehicle's full range will be available for the next day.

If the vehicle has stopped charging, the Green CHARGING light will be off. Remove the cable and the vehicle is ready to use. If the charging is still in progress, first push the START/STOP button on the CS-100 front panel. The charging light will start blinking and the EV charge connector can be removed.

Front Panel

The front panel of the CS-100 has one GREEN and one RED light to indicate the status of the unit. The operational state of the unit can be determined by looking at the panel lights and comparing them with **Table 1** below.

Table 1. Front Panel Indicators

(Green) CHARGING	(Red) PROTECTION	Status of CS EVSE
OFF	OFF	- Vehicle is not connected - or vehicle is not requesting charge
ON	OFF	- Vehicle is charging at 80A
OFF	ON	- The ground fault is tripped - or the ground is missing - or service is required
ON	ON	- There is a problem on the vehicle
blink	OFF	- charging interrupted by the user - or charging disabled by external timer - or unit is in Cold Load Pickup

Figure 1. The CS-100 Front Panel



In Case of Difficulty

ClipperCreek recognizes that this EVSE will be heavily relied upon to charge an electric vehicle for daily transportation needs. Therefore, every effort will be made to restore service should problems arise.

In the event of a problem, charging will stop and the Red PROTECTION light will turn on. If this happens, please try the two simple steps below before calling a Service Representative.

1. Remove the cable connector from the vehicle socket. The Red PROTECTION light may turn off. If it does turn off, plug the connector back into the socket, and see if charging begins normally.
2. If the Red PROTECTION light *does not* go out when the connector is removed, be sure the connector is removed from the vehicle socket and switch off power at the circuit breaker feeding power to the CS-100. Wait a few seconds and switch the circuit breaker back on again. If the Red PROTECTION light does not turn on, re-connect the cable to the vehicle. Charging should begin normally. If charging does not begin, or if the Red PROTECTION light turns back on, call a Service Representative.

The information obtained by following the above steps will help the Service Representative determine what the problem is and how best to get the EVSE operational again as quickly as possible.

FEATURES

The following features are supported by the CS-100:

Personnel Protection System: Ground Fault protection with Self-Testing and Auto-Reclosure (see below), no manual resetting or testing is necessary.

Ground Monitoring Circuit: Constantly checking for the presence of a Safety Ground connection.

Auto-Reclosure: If a problem occurs that interrupts charging, the unit will automatically clear all error indications after 5 minutes, and attempt to begin charging again. If the problem is immediately sensed a second time, it will wait another 5 minutes and try again. This process will repeat several times, at which point power will be removed and no further attempt will be made. The Red PROTECTION light on the front panel will be on.

This feature helps ensure that the vehicle will be charged and ready for use when needed. Temporary problem indications such as ground-faults or utility power surges can be overcome automatically without the need for the user to manually re-initiate charging.

Off-Peak Charging: For this feature, an external timer must be installed (purchased separately). A utility may also install a special Time-of-Use meter to provide special rates for Off-Peak Charging. If a timer is installed, it is not necessary to wait until late evening to plug the CS-100 charge connector into the vehicle. The CS-100 may be connected to the vehicle at any time. Even though the vehicle may immediately request a charge, the timer will cause the CS-100 to delay energizing the cable until the specified time period. With this feature, the Green CHARGING light will blink while the vehicle waits for the timer to allow charging.

Making the best use of the Off-Peak Charging feature will require the following:

1. Installation of a Time-Of-Use meter by the electric utility.
2. Installation of a clock/timer to allow the CS-100 to charge only during Off-Peak hours.
3. Connecting the timer's control wire to the High/Off pin on the 4-position terminal block. Refer to **Figure 9**, CS Service Wiring to identify the correct pin.

If this feature is desired, please call the local utility to be sure the Time-of-Use meter is available in the area before having the timer installed. Technical information to help connect the timer to the CS can be found in the Load Management Inputs section of this manual.

NOTE: Many vehicles are equipped with programmable timers for the purpose of setting the charge time independent of the EVSE.

Cold Load Pickup: This feature is built-in to the CS-100, but will only be apparent when the utility power fails during charging. If the charging connector is still plugged into the vehicle when utility power is restored, the Green CHARGING light will blink and the unit will not energize the cable for a random time between 2 and 12 minutes. This is to prevent the utility's grid from experiencing a large surge at turn-on, allowing electric vehicles in the area to begin drawing current at random times rather than all at once.

NOTE: The vehicle does not need the owner's attention after a power outage. The CS-100 will automatically resume charging when power is restored.

External Error Indication: Whenever the Red PROTECTION light is on, a relay on the board will provide a contact closure that can be used to remotely indicate that a problem exists. A fleet vehicle yard, for example, could use this feature to light a lamp or ring a bell in the main office, indicating that a vehicle has a charging problem. This early warning helps assure that each vehicle will be properly charged and ready for use when needed. The two rightmost pins on the 4-position terminal block are the relay contacts for the External Error Indication. More information on the Relay Output feature can be found in the Load Management Inputs section of this manual.

Maintenance Current: If the unit is set up for Off-Peak Charging as described above, normal charging current cannot be drawn by the vehicle until the Off-Peak hours. However, the CS-100 can be set up to allow a minimum amount of current while waiting for the timer to allow full-rate charging. This is known as Maintenance Current, used for all power needs on the vehicle except charging the main battery pack. An example would be preheating the cab, or keeping the auxiliary battery topped off. As in the Off-Peak mode above, the Green CHARGING light will flash if the vehicle is connected and waiting for the timer to allow charging. The contactor will close immediately to supply this small amount of power, but the main battery pack will not be allowed to charge.

The Maintenance Current feature can be selected by connecting the Timer's control wire to the High/Low pin on the 4-terminal Terminal Block. Connecting to the High/Off pin will remove all power from the vehicle until the Off-Peak Charging time arrives. Refer to **Figure 9**, CS Service Wiring to identify the correct pin. The other two pins on the terminal block are the relay contacts for the External Indicator.

INSTALLATION - SERVICE CONNECTIONS



CAUTION: This is a single-phase device. DO NOT connect all 3 phases of a 3-phase feed! Any two phases of a 3-phase wye-connected feed can be used. The center-point of the 3 phases (usually used as Neutral) must be grounded somewhere in the system. A current-carrying Neutral is not needed by the CS-100. Only **LINE 1**, **LINE 2**, and **GROUND** are required, as shown in **Figure 3**.



CAUTION: The two phases used must each measure 120V to Neutral. Earth Ground must be connected to Neutral at only one point, usually at the Service Entry Breaker Panel.



CAUTION: If a 240V 3-phase feed is from a Delta-connected secondary, the leg used must have a center-tap. That tap must be Grounded. Only the two phases either side of the center-tapped leg can be used. See **Figure 4**.



Caution: Warranty is void if this unit is wired improperly.



WARNING: Only a qualified electrician should perform the installation. The installation must be performed in accordance with all local electrical codes and ordinances.

Only 3 wires are connected, but care must be taken that the service transformer secondary connection is definitely known, and the 3 wires from the main circuit breaker panel are connected and labeled correctly. **Figures 2, 3, and 4** show the most common service transformer secondary wiring formats.

Notice that **L1, L2 & Ground** are labeled on each diagram. These transformer outputs correspond to the same inputs on the CS-100. Each of the two 3-phase diagrams shows an L3 output, which is not used. **Do not connect all three phases of a 3-phase secondary to the CS. This is a single-phase device.**

The Neutral at the service panel **must** be connected to earth ground **somewhere** in the system on **any** of the three connection arrangements. Ground-fault protection is not possible unless the Neutral (center-tap on the service transformer) is connected to an earth ground. If no ground is provided by the electrical service, a grounding stake must be driven into the ground nearby, following local electrical codes. The grounding stake must be connected to the ground bar in the main breaker panel, and Neutral connected to ground at that point.



WARNING: Local electrical codes must always be followed when installing the grounding stake.

The following diagrams illustrate the 3 service transformer secondary connections most common in the United States.

Figure 2. 220/240V Single Phase

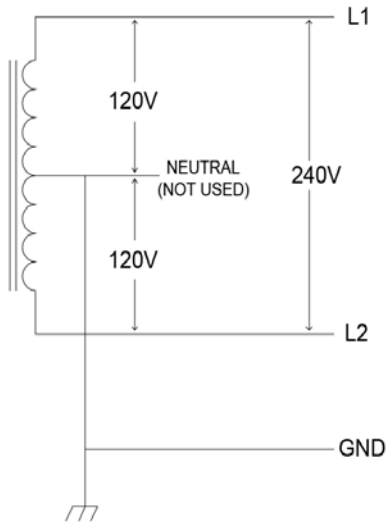
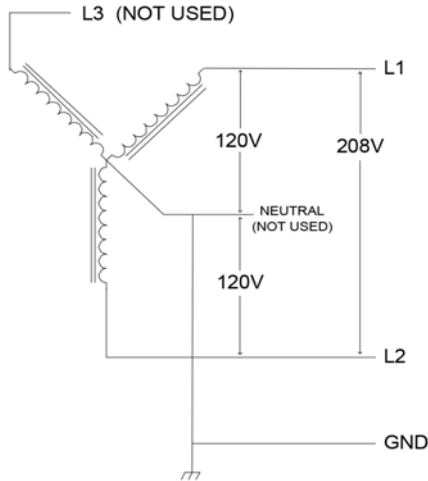
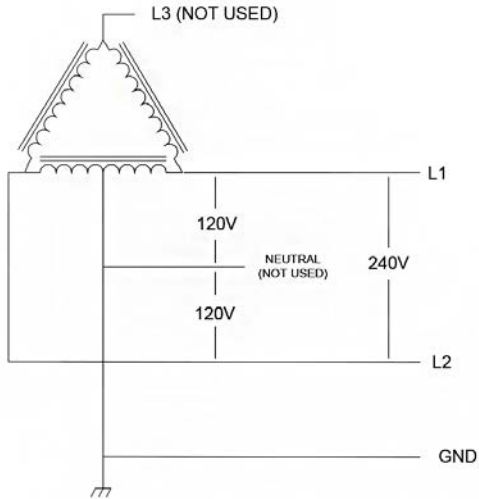


Figure 3. 208V 3- Phase, Wye-Connected

NOTE: With a wye-connected secondary, any two of the legs can be used to provide 208V to the CS-100. For example, **L1 & L2**, or **L1 & L3**, or **L2 & L3**. Leave the unused leg open. **DO NOT** connect it to a Neutral bar or to **Ground**. Be sure the center point is grounded to earth somewhere in the system.

Figure 4. 240V 3-Phase, Delta-Connected, w/Center-Tap on One Leg

CAUTION: 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 phases must ***both*** measure 120V to neutral. The third line (L3) of the delta is 208V, with respect to neutral, and is sometimes referred to as a “stinger”. ***Do not use this third line!*** Consult the transformer manufacturer’s literature to be sure the single leg can supply the required power.



CAUTION: A 3-phase delta-connected transformer secondary without a center-tap on one leg is ***not usable with the CS-100***. No “neutral” point is available to be connected to ground for ground-fault protection, and the CS-100 will not allow the contactor to close if it does not sense the presence of a ground wire connected to a “neutral” point on the transformer secondary.

MOUNTING PROCEDURES

1. Locate the wall mounting position of the EVSE:
 - Position the bottom of the EVSE 38 inches above the ground.
 - The mounting holes are spaced 16" apart to accommodate wall studs.
 - If there is no solid structural framing on those centers, an adequate alternative mounting surface for the EVSE must be provided.
2. Attach the EVSE to the wall studs using (4) ¼" x 2 ½" lag screws.
3. Use a multi-set or equivalent if mounting on a concrete wall.
4. Remove the applicable knock-out in the EVSE, push the power leads through the hole, then connect the power conduit to the hole.
5. After mounting, continue the installation by referring to the Wiring Instructions section of this manual.

Figure 5. Wall Mounting of CS

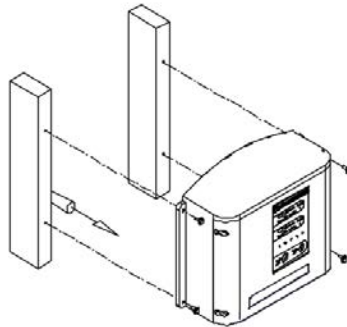
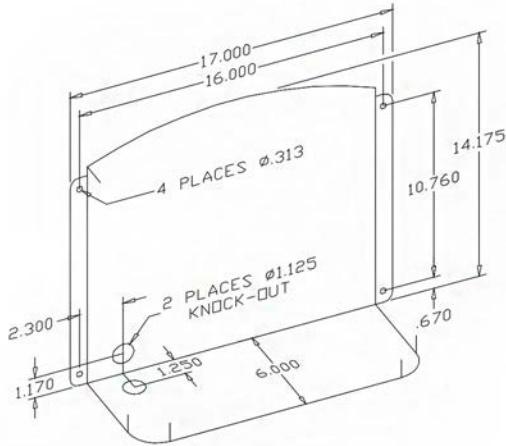


Figure 6. CS-100 Installation Template

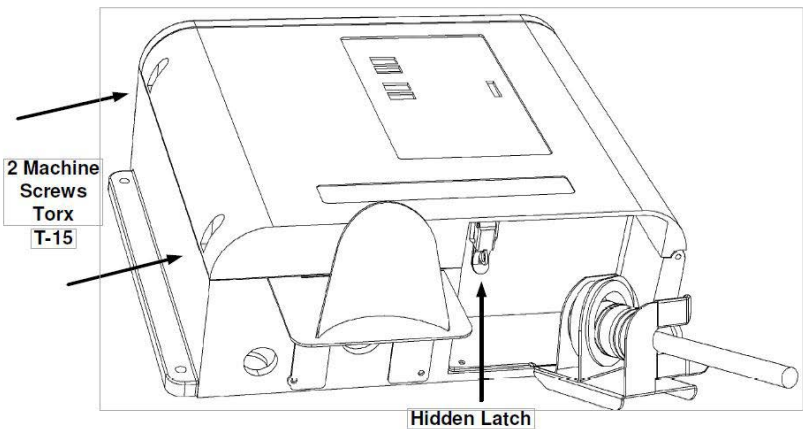


Front Door Hidden Latch:

To open the enclosure, perform the following:

1. Unfasten the two (2) machine screws on the left edge of the enclosure lid.
2. Unlatch the hidden latch located underneath the enclosure inside of the connector compartment.

Figure 7. Front Door Hidden Latch

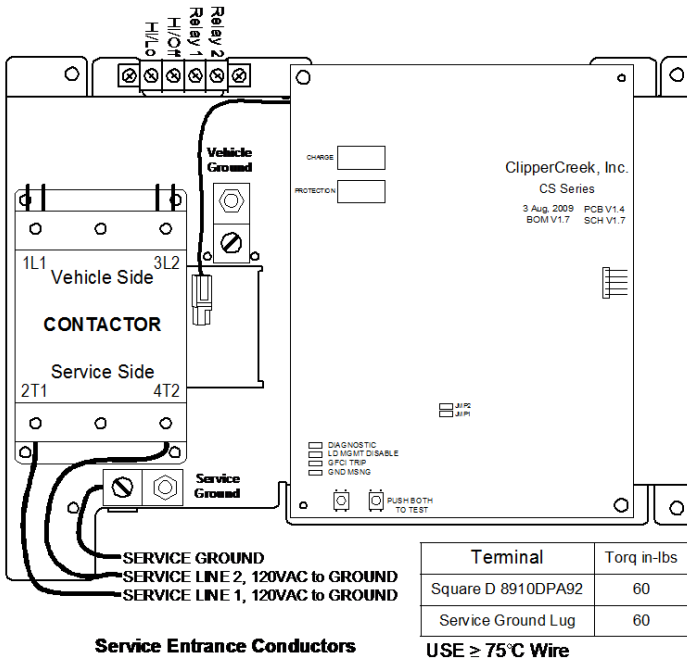


NOTE: A T15 or T20 Torx driver is needed to open the door.

WIRING INSTRUCTIONS

Before connecting wires to the CS-100, carefully review the Installation - Service Connections section of this manual. If unsure of the type of power provided at the service panel, please consult with the local utility or call a Customer Service Representative for assistance.

Figure 8. CS-100 Service Wiring



- The CS-100 requires a dedicated 208/240V AC 50/60 Hz, single-phase circuit.
- Do not use a GFCI breaker with the CS-100. The CS-100 contains a Personnel Protection circuit that is the equivalent and specifically designed for use with electric vehicles.
- Only 3 wires are needed to wire the CS: **LINE 1**, **LINE 2**, and **SERVICE GROUND**, as shown in **Figure 8**. Wire the unit from the breaker panel using wire sized in accordance with local electrical codes. The circuit breaker should be rated at 25% over the EVSE's max continuous output.
- The **LINE 1** and **LINE 2** phases are terminated on the input side of the contactor itself, as shown in **Figure 8**. The **SERVICE GROUND** is terminated on the Ground Terminal at the bottom of the enclosure.
- Be careful not to damage the PC Board when removing the power-entry knock-out, attaching the conduit, or when wiring the service conductors to the contactor.

Testing After Installation

- Apply utility power, and observe that only the Diagnostic LED is flashing on the circuit board. If it is not flashing, the board may be defective.
- The two Charge Test buttons on the PC board simulate a connection to the vehicle. Simultaneously press and hold on the two Charge Test buttons. The contactor should close and the large Green CHARGING light should turn on.
- If a vehicle is available, connect the CS-100 to the vehicle and verify that the contactor closes and the Green CHARGING light turns on.
- Once the installation has been tested, close the enclosure door and re-secure the latch. Reinsert the two Torx screws on the left-hand side and hand-tighten them with a T15 Torx L driver until snug.

Installation is complete.

FOR THE SERVICE TECHNICIAN

There are four small LEDs on the PC board to help diagnose problems:

Diagnostic: This is the “heartbeat” of the system. When only this LED is slowly flashing, the system has not detected any failures. If it is on but not flashing, the board is defective. If it is not on, either no power is applied or the board is defective.

To test the system, press and hold the two Charge Test buttons simultaneously. If the contactor closes, the CS-100 is operating normally. Connect the charging cable if a vehicle is available. The contactor should close. If not, the charging cable or vehicle socket may be defective or the vehicle is not requesting a charge.

If the CS-100 detects an internal failure, the Diagnostic LED will blink at a faster rate. One of the other LEDs may also be on and indicate the nature of the problem, such as an inoperative Ground Fault circuitry or a missing Service Ground.

Load Management Disable: This status indicator LED will turn on in conjunction with a slow-blinking Diagnostic LED when either the Cold Load Pickup or External Timer mode is active. This is not a failure mode, merely a status indicator. If a vehicle is connected, the front panel Green CHARGING light will blink when the Load Management Disable LED is on. If a vehicle is not connected, the Green CHARGING light will not activate.

GFCI Trip: This Diagnostic LED is on when the unit has detected a ground fault. When a fault has occurred the contactor will open, the front panel Red PROTECTION light will turn on and the Diagnostic LED will blink at a faster rate. The system waits 5 minutes after sensing a fault, then automatically attempts recovery. After several such attempts, the unit will remain in Protection mode.

If a ground fault error or an EV connection error has been detected:

1. Disconnect the EV charge cable from the vehicle’s inlet charge port.
2. Inspect the EV charge cable connector and the vehicle’s inlet charge port. Be sure both are clean and undamaged.
3. Reconnect the EV charge cable connector to the vehicle’s inlet charge port.
4. If the fault condition persists, a problem may exist on the vehicle. Refer to the vehicle owner’s manual for instructions on inspecting and cleaning the inlet charge port.
5. If the charge cable connector and vehicle charge port appear to be in good condition and the error condition does not clear, contact a Customer Service Representative.

Ground Missing: On when the unit has detected a missing Service Ground. The CS-100 will not close the contactor until a proper Service Ground has been connected. The front panel Red PROTECTION light will be on, and the Diagnostic LED will be flashing at a faster rate.

NOTE: If a missing Service Ground is discovered, power should be turned off before re-connecting the Service Ground. If Service Ground is reconnected without turning off the power, it will be necessary to wait 5 minutes for the CS-100 to clear the Ground Missing error.

Table 2 below illustrates the information that can be obtained from the 4 LEDs on the PC board.

Table 2. PC Board Diagnostic LEDs

Status	LED 1	LED 2	LED 3	LED 4
	Diagnostic Blink Rate	Load Mgmt Disable	GFCI Trip	Ground Missing
Normal Operation	slow	--	--	--
Charging	slow	--	--	--
Charge Disabled	slow	ON	--	--
CCID Trip	fast	--	ON	--
Ground Missing	fast	--	--	ON
Service Required	fast	--	--	--

NOTE: A (--) symbol indicates the LED is off.

MAINTENANCE

The CS-100 requires no periodic maintenance other than occasional cleaning.



WARNING: To reduce the risk of electrical shock or equipment damage, exercise caution while cleaning the unit and the EV charge connector cable.

1. Turn off the EVSE at the circuit breaker before cleaning.
2. Clean the EVSE using a soft cloth lightly moistened with mild detergent solution. Never use any type of abrasive pad, scouring powder, or flammable solvents such as alcohol or benzene.



AVERTISSEMENT: Pour réduire le risque de choc électrique ou des dommages équipement, user de prudence lors du nettoyage de l'appareil et le câble du connecteur de charge EV.

1. Eteignez la équipement au disjoncteur avant de le nettoyer.
2. Nettoyez l'équipement à l'aide d'un chiffon doux légèrement humidifié avec une solution de détergent doux. Ne jamais utiliser de tampons abrasifs, de poudre à récurer ou de solvants inflammables tels que l'alcool ou le benzène.

SPECIFICATIONS

Line Input Power - Service Entrance

Voltage & Wiring: 240V AC Single-phase - L1, L2, and Safety Ground.
208V AC 3-phase, Wye-Connected - Any 2 phases, and Safety Ground.
240V AC 3-phase, Delta-Connected. With center-tap on one leg, must use only the two phases on both measure 120V AC to ground.
Do not use the third leg (208V “Stinger”).

Frequency: 50/60 Hz

CCID: 20mA

Current & Output 100A Circuit Breaker., The maximum current for the vehicle is 80A, set by the duty cycle of the Pilot waveform.

Dimensions:

Height 304 mm (12 in)
Width 457 mm (18 in)
Depth 203 mm (8 in)

Color: Gray

Cable Length: Approximately 7.6 m (25 ft)

Weight (with cable): 16.5 kg (36 lbs)

Environment:

Operating Temperature -40°C (-40°F) to +50°C (+122°F)
NEMA Rating NEMA 4 - outdoor use, watertight

Timer Connection: Ground to disable charging, leave open to charge. 12 volts with 1K source resistance when open circuit, 12mA sink current when grounded.

Error Relay Contacts: Dry contact, 24V AC/DC max, 5A current max, closed if error present.

Agency Approvals: cULus, cETLus, FCC Part 15 Class B

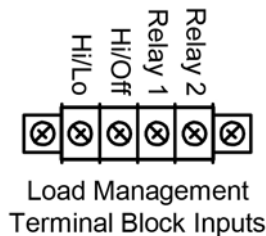
LOAD MANAGEMENT INPUTS

If the CS-100 has been configured for Off-Peak Charging, the Green CHARGING light may blink after the EV charge cable is plugged into the vehicle. If the vehicle does not charge in this mode it may indicate that a timer or other device has been connected to the Hi/Off input on the 4-position terminal block. In this case, charging will not occur until a specified time such as later in the evening when electrical rates are lower. To override this feature and begin charging immediately, push the Start/Stop button.

Pressing the button will alternately Stop and Re-Start charging. The button will not initiate charging unless the cable is connected, and the vehicle is requesting a charge.

There are two Load Management inputs, labeled Hi/Low and Hi/Off, on a terminal block as shown in **Figure 9** below. Grounding Hi/Off will completely inhibit charging until it is released from ground. Grounding Hi/Low will tell the EVSE to send a signal to the vehicle instructing the vehicle that that a reduced power level is available for auxiliary uses such as cooling the battery pack, or pre-heating the vehicle cab.

Figure 9. 4-Position Terminal Block



RELAY OUTPUT

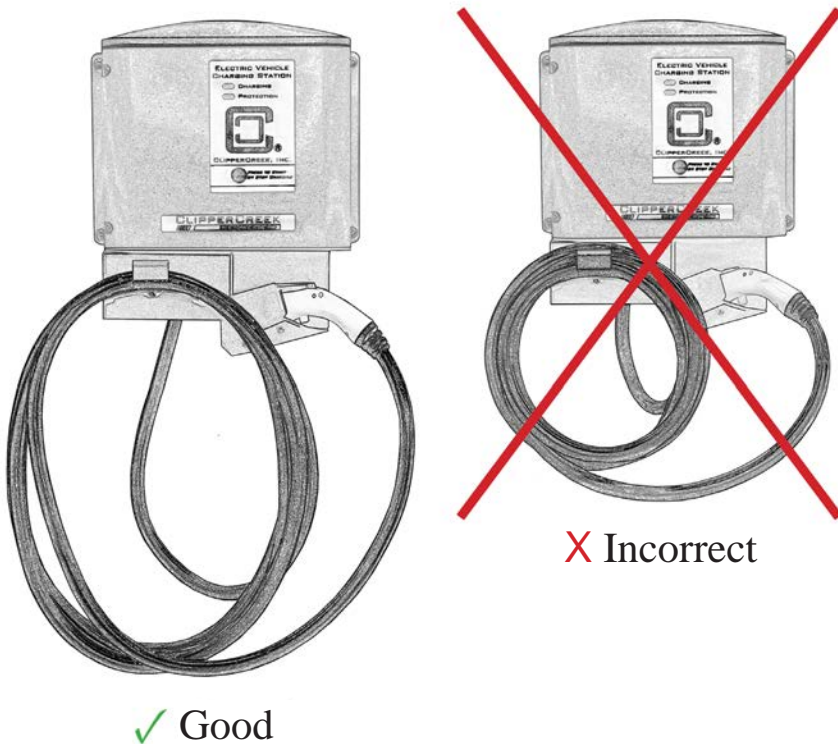
The two rightmost terminals labeled Relay 1 & Relay 2 are dry contacts that are normally open. If the Protection light turns on, or other internal problems are sensed by the CS-100's computer, these contacts will close. This can be used to power a remote indicator to warn the user that a problem exists, giving them the opportunity to correct the problem and help ensure the vehicle will be charged when needed.

CS CABLE WRAP GUIDELINES

The EVSE has a cable storage saddle located on the lower left-hand side of the EVSE to allow the charge cable to be wrapped around it for convenient storage as well as to keep the bulk of the cable off of the ground and out of the way. As the charge cable is comprised of a number of wires, coiling the charge cable too tightly around the CS-100 saddle will result in the charge cable feeling warmer to the touch than would ordinarily be the case.

To minimize this effect, it is recommended that the charge cable be loosely coiled on the saddle with larger loops. This will also permit greater convenience in “pulling off” additional loops if a longer charge cable reach is desired. See **Figure 10**.

Figure 10. Wrap the Charge Cable Loosely



CUSTOMER SUPPORT

Call a Customer Service Representative at any time, 24 hours a day, at the number below. **PLEASE HAVE THE MODEL NUMBER AND SERIAL NUMBER AVAILABLE WHEN YOU CALL.** These can be found on the side of the enclosure. If a call is made after business hours or on weekends, please leave name, telephone number, the unit's serial number, and a brief description of the problem. A Customer Service Representative will call back at the earliest opportunity.

**Distributor
Place Contact Information
Sticker Here.**

TO CONTACT CLIPPERCREEK DIRECTLY FOR SERVICE, CALL (877) 694-4194 MONDAY THROUGH FRIDAY BETWEEN 8:00AM AND 5:00PM PACIFIC STANDARD TIME.



LIMITED WARRANTY – ELECTRIC VEHICLE SUPPLY EQUIPMENT and ACCESSORIES

Enphase Energy, Inc. through its ClipperCreek division
11850 Kemper Road
Auburn, California 95603
Phone: 877-694-4194
Email: information@clippercreek.net

Subject to the terms and conditions below, Enphase Energy, Inc. (“**Enphase**”) provides the following limited warranty to the original purchaser of the products (“**Covered Owner**” or “**you**”):

Product 1-year parts, 1-year factory labor:

Subject to the terms and conditions below, Enphase warrants the product to be free from defects in material and workmanship for a period of 1 year commencing on the date of installation (first use) (the “**Warranty Period**”). Except where prohibited by applicable law, the product installation date must be evidenced and communicated to Enphase by way of the product registration card (or its equivalent). The product registration card must be filled out completely and accurately, and returned to Enphase within 30 days after installation, and the product installation date shall be within 6 months after the purchase date. If a Product installation date is not communicated to Enphase as described above, the product purchase date indicated in the Covered Owner’s proof of purchase for the product shall serve as the start date of the Warranty Period.

If Enphase confirms the existence of a defect that is covered by this Limited Warranty, Enphase will, at its option, repair or replace the product, or refund the actual purchase price for the product less reasonable depreciation based on use at the time that Enphase is notified of the defect. Enphase will not elect to issue a refund unless (i) Enphase is unable to provide a replacement and repair is not commercially practicable or cannot be timely made, or (ii) Covered Owner is willing to accept such a refund. If a defect in material or workmanship exists in the product, to the extent permitted by law, these are the sole and exclusive remedies. Repair parts and/or replacement products may be either new or reconditioned at Enphase’s discretion. This limited warranty does not cover defects caused by improper installation or use, including but not limited to improper connections with peripherals, external electrical faults, accident, disaster, misuse, abuse, or modifications to the product not approved in writing by Enphase. Any service repair outside the scope of this limited warranty shall be at applicable rates and terms then in effect. This warranty covers factory parts and factory labor only; it does not cover field service or removal and replacement of the product or any other costs.

All other express and implied warranties for this product including the warranties of merchantability, fitness for a particular purpose, and non-infringement are hereby disclaimed. Some states do not allow the exclusion of implied warranties or limitations on how long an implied warranty lasts, so the above limitation may not apply to you. In no event will Enphase, any of its authorized sales and service representatives, or its parent company be liable to Covered Owner or any third party for any damages in excess of the purchase price of the product. This limitation applies to damages of any kind including any direct or indirect damages, lost profits, lost saving or other special, incidental, exemplary or consequential damages whether for breach of contract, tort or otherwise or whether arising out of the use of or inability to use the product, even if Enphase or an authorized Enphase representative or dealer has been advised of the possibility of such damages or of any claim by any other party. Some states do not allow the exclusion or limitation of incidental damages for some products, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

To obtain warranty service:

Call your nearest authorized Service Representative or the ClipperCreek division of Enphase at the above number. You will receive information as to how service for the product will be provided. If you mail or ship the product in for service, you must insure the product, prepay all shipping charges, and properly pack it for shipment in its original shipping container or its equivalent. You are responsible for all loss or damage that may occur in transit. You must provide proof of purchase for the product and the purchase date before any warranty service can be performed.

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