



SUN COUNTRY
HIGHWAY

BRINGING SUSTAINABILITY TO LIFE

User's Manual

SCH 20-25 EVSE



PLEASE NOTE

This user's manual includes the latest information at the time of printing. Sun Country Highway, 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 could void the product warranty.

If you have questions about the use of this product, contact your customer service representative. Refer to the Customer Support section located in this guide.

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SAFETY INFORMATION



Warning: Turn off input power to your charge station at the circuit breaker panel before servicing or cleaning the unit.

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

Note Those vehicles which follow the SAE J1772 standard for communication with the charging station can inform the SCH Charger that they require an exhaust fan. The SCH Charger is not equipped to control ventilation fans. If an exhaust fan is requested, the SCH Charger will not charge the vehicle. If this function is required, ask your Sun Country Highway representative for information on other products which have the exhaust fan control feature.



Caution: DO NOT charge your vehicle indoors if it requires ventilation. Contact your Service Representative for information.

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 your charge station is suspected, we suggest the following steps be taken before consulting your Sun Country Highway 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 could void FCC compliance.

OPERATION

The 25 amp Electric Vehicle Charging Station is a compact wall-mounted charging station that provides the Plug-in Hybrid or Battery Electric Vehicle (together Plug-In Electric Vehicles, or “PEV”) user with a safe and manageable link between the power grid and the PEV.

Figure 1. The 25 amp EV Charger Front Panel



The SCH evCharger is very easy to use. Just remove the charge connector from its holster, and plug it into the vehicle’s charge port. If there is a mechanical latch that holds the charge connector firmly in place while charging, be sure the latch has “clicked” into place. Normally, the vehicle will immediately request a charge, the Green CHARGING light will turn on, and charging will commence. After an average driving day, the vehicle 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 turn off. Remove the charge connector and you’re ready to use the vehicle. If the charging is still in progress, first push the START/STOP button on the EVSE front panel. The charging light will blink. The charge connector can then be removed from the vehicle.

FRONT PANEL

The front panel on the SCH Charger has four indicator lights:

Power (yellow), indicates that power is available.

Charging (green), indicates that AC power is currently applied to the vehicle.

Power Fault (red), indicates that the SCH Charger is not wired correctly. The problem can be due to improper grounding or a missing earth ground. The wiring should be examined by a qualified electrician.

Charging Fault (red), indicates that the SCH Charger is unable to communicate with the vehicle correctly.

Table 1. Front Panel Indicators

#	Amber Power LED	Green Charging LED	Red Power Fault LED	Red Charging Fault LED	Fault Condition
1	off	off	off	off	No power to EVSE. Check circuit breaker
2	ON	off	off	off	No plugged into the EV or to the EV is not ready to charge
3	ON	ON	off	off	Charging enabled. power is applied to the vehicle
4	ON	off	ON - not blinking	off	Improper grounding or ground is not present
5	ON	off	off	ON - not blinking	Problem with the EV communications. Disconnect and restart
6	ON	off	off	blinking	EV ground fault trip. Check vehicle connection.
7	ON	off	blinking	blinking	Internal EXSE fault. Call for service.

INSTALLATION

Service Connections



Caution This is a single-phase device. Do not connect all 3 phases of a 3-phase feed !!! You may use any two phases of a 3-phase wye-connected feed. 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 SCH Charger. Only Line 1, Line 2, and Ground are required, as shown in Fig 4.



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 Fig. 5 below.



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 3, 4, and 5 below show the most common service transformer secondary wiring formats.

Notice that L1, L2, & Gnd are labeled on each diagram. Those transformer outputs correspond to the same inputs on the SCH Charger. Also, 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 SCH Charger. 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 3. 220/240V Single Phase

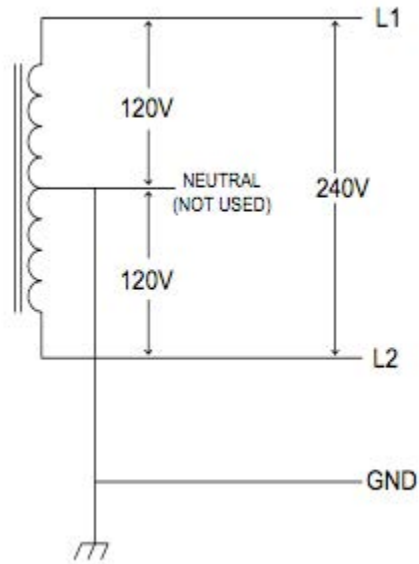
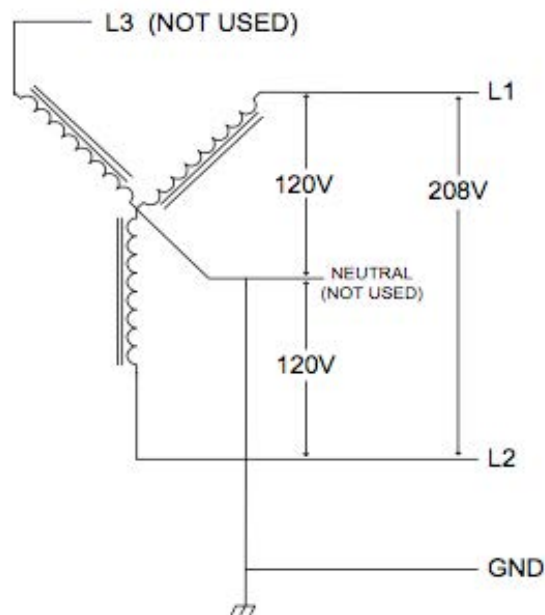
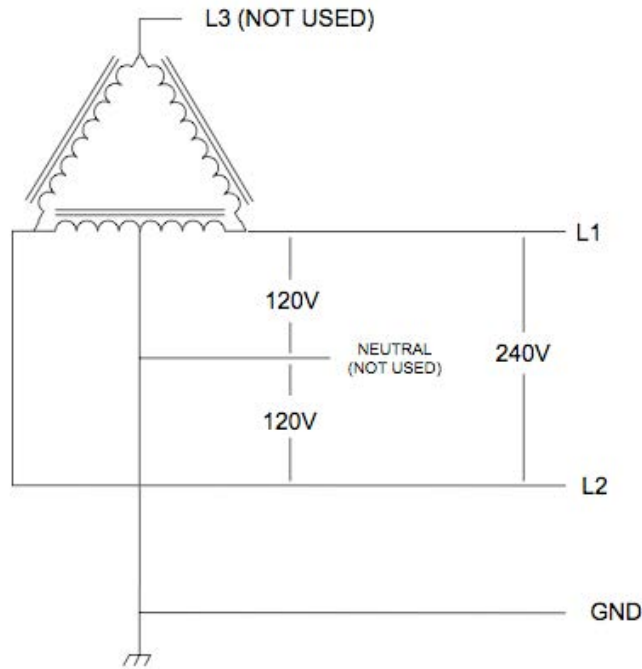


Figure 4. 208V 3-Phase, Wye-Connected



Note: With a wye-connected secondary, any two of the legs can be used to provide 208V to the SCH Charger. 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 5. 240V 3-Phase, Delta-Connected, with 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 SCH Charger*. No “neutral” point is available to be connected to ground for ground-fault protection, and the SCH Charger 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

Locate the wall mounting position of the EVSE:

- The three SCH Charger service conductors are shielded by a 3 foot flexible conduit. The SCH Charger must be positioned such that this conduit can reach a nearby service panel or junction box.
- Position the bottom of the charge station at a comfortable height and at least 18 inches above the ground. Ensure that the LEDs on the front panel of the EVSE can clearly be seen by anyone who will be operating the device.
- The SCH Charger has four mounting holes spaced in a 2" wide by 10" tall rectangular pattern. Use a template to mark hole locations on the wall.

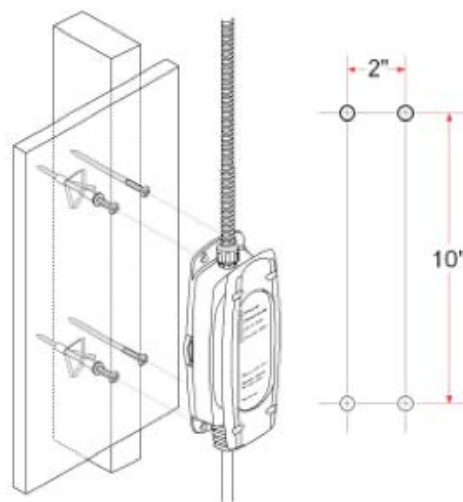
For Hollow-Wall Construction:

- Place the unit such that at least two (but preferably all four) mounting holes can take advantage of solid structural framing inside of the wall or a strong wall surface such as plywood.
- For any remaining mounting holes which do not have a solid mounting structure (such as drywall without a solid backing) it will be necessary to use proper anchoring hardware such as drywall toggles or molly bolts.

For Solid-Wall Construction:

- To secure the unit in concrete, pre-drill appropriately sized holes and use multi-set or wedge anchor hardware at all four mounting points.
- To secure the unit in brick or stone, pre-drill appropriately sized holes and use sleeve anchors at all four mounting points.

Figure 5. Mounting the SCH Charger to a hollow wall

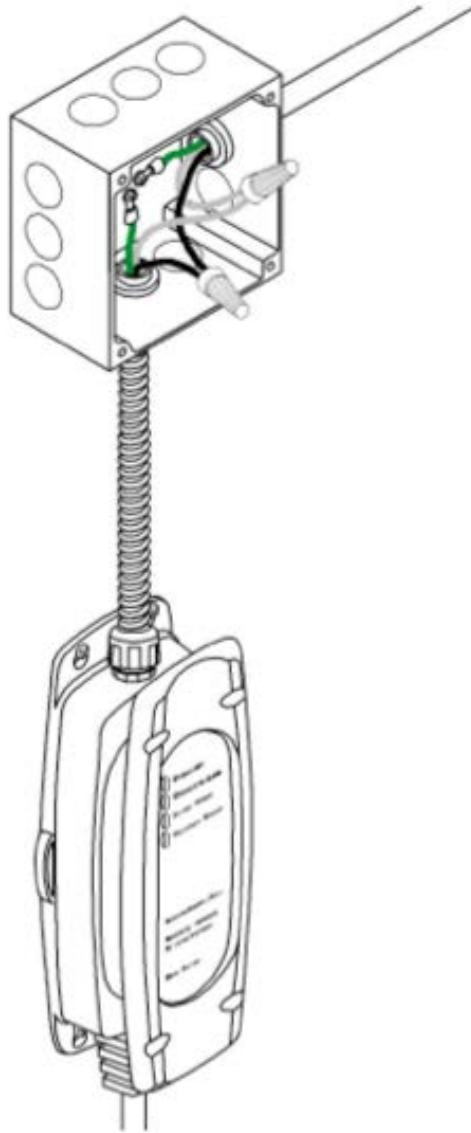


Machine screw size #10 hardware is recommended for mounting the SCH Charger. Screw shafts of at least 2" are recommended. The SCH Charger mounting holes are 3/16" in diameter, so ensure that the screw heads do not exceed this size. Place appropriately sized washers between the screw heads and the SCH Charger enclosure mounting flanges.

Wiring

Route the SCH Charger conduit to a nearby service panel or junction box. Use the included 1/4" trade size watertight fitting to provide a moisture-resistant seal with the service panel or junction box. If necessary, drill a 1/2" diameter hole to accommodate the liquid-tight fitting.

Figure 6. Wiring the SCH Charger in a junction box



Note Before connecting the SCH Charger service conductors, please carefully read the section of this manual titled Service Connections, on page 5. If you are unsure of the type of power provided at the service panel, please consult with your local utility or call your Service Representative for assistance.

Note The three SCH Charger service conductors have color coded wire insulation for standard 240VAC installation:

- | | | |
|--------|--------|--------------------|
| Green: | Ground | |
| Black: | Line 1 | (120VAC to Ground) |
| Red: | Line 2 | (120VAC to Ground) |

SPECIFICATIONS for SCH evCharger

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 either side of the center-tap. The two phases must both measure 120V AC to ground. **Do not use the third leg (208V “stinger”).**

Voltage Range: 185V AC to 264V AC

Frequency 60 Hz

Current	Charger Model	Circuit Breaker	Maximum Current
	15 amp evCharger	15A	12A
	20 amp evCharger	20A	16A
	25 amp evCharger	25A	20A

Note that the maximum current for the vehicle is set by the duty cycle of the Pilot waveform.

Output Power Variable depending upon the SCH Charger model and vehicle demand. At 240V AC, the 15 amp Charger is outputs approximately 3KW, the 20 amp Charger 4KW, and the SCH Charger 5KW.

Dimensions Dimensions are for the enclosure only

Height 280 mm (11 in)

Width 100 mm (4 in)

Depth 80mm(3in)

Weight (with Cable) 3 kg (7 lbs) with SAE-J1772™ connector and 20' cable

Environment

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

Agency Approvals UL Listed, FCC Part 15 Class B

CUSTOMER SUPPORT

Call your 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 your call is made after business hours or on weekends, please leave your name, telephone number, the unit's serial number, and a brief description of the problem. A Service Representative will call back at the earliest opportunity.

MAINTENANCE

The SCH Charger requires no periodic maintenance other than occasional cleaning.

Warning To reduce the risk of electrical shock or equipment damage, do not allow liquid to enter the unit while cleaning it.

1. Turn off your charge station at the circuit breaker before cleaning.
2. Clean your charge station 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.

Please visit Sun Country Highway's Website @ www.suncountryhighway.ca

WARRANTY INFORMATION

LIMITED WARRANTY – ELECTRIC VEHICLE SUPPLY EQUIPMENT

MODEL: SCH-20 and SCH-25 evCharger

Sun Country Highway Ltd.
325 Victoria Ave
Clinton, ON, N0M1L0
1 866 467-6920

Sun Country Highway shall provide the following warranty with respect to the Products to Representative, its Sub-Representatives and their customers:

Product 3-year parts, 3-year factory labor,

Sun Country Highway, Inc. warrants this product to be free from defects in material and workmanship. The warrantee period shall commence on the date of installation date (first use). The product installation date must be evidenced and communicated to Sun Country Highway by way of the warrantee registration card (or its equivalent). The warrantee registration card must be filled out completely and accurately, and returned to Sun Country Highway 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 Sun Country Highway as described above, the product purchase date shall serve as the warranty commencement date.

If this product is defective in materials or workmanship during the warranty period, Sun Country Highway will, at its option, repair or replace the product. Repair parts and /or replacement products may be either new or reconditioned at Sun Country Highway's discretion. This limited warranty does not cover service or parts to repair damage due to 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 Sun Country Highway. Any service repair outside the scope of this limited warranty shall be at applicable rates and terms then in effect. The warranty covers factory parts and labour 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 and fitness for a particular purpose, 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.

If this product is not as warranted above, your sole and exclusive remedy shall be repair or replacement as provided above. In no event will Sun Country Highway, any of its authorized sales and service representatives, or its parent company be liable to customer 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 Sun Country Highway or an authorized Sun Country Highway 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 Sun Country Highway 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 of the product and the purchase date before any warranty service can be performed. 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 Sun Country Highway or an authorized Sun Country Highway 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.



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