



EVSE 2 Charging Station



Table of contents

- 1 Introduction pg. 3
- 2 Important Safety Warnings and Cautions pg. 4
- 3 Regulatory Information pg. 4
 - 3.1 Regulatory Information 4
 - 3.2 Product Specification 4
 - 3.3 Radio and Television Interference 4
- 4 Features and Specifications pg. 4 - 5
 - 4.1 Ground Fault Protection 4
 - 4.2 Automatic Reset 4
 - 4.3 Ground Assurance Monitoring 4
 - 4.2 Self-Testing 4
 - 4.4 Features and Specifications Charts 4
- 5 Applicable Electrical Systems pg. 6-7
 - 5.1 Applicable Electrical Systems 6
 - 5.2 Electrical Requirements 7
 - 5.3 Grounding Instructions 7
- 6 Amperage and Breaker Parameters pg. 8
- 7 Mounting Instructions pg. 8-14
 - 7.1 Package contents 8
 - 7.2 Tool for Package Contents 8
 - 7.3 Finished Wall Installation 9-11
 - 7.4 Masonry Wall Installation 12-13
 - 7.5 Mounting Template 14
- 8 Power and Status LED Indications pg. 15-16
- 9 Troubleshooting pg. 16
- 10 Miscellaneous pg. 17
 - 10.1 Maintenance 17
 - 10.2 Cleaning 17
 - 10.3 Storage and Moving 17
- 11 Warranty pg. 17

1 Introduction

The EVSE2 Charging Station is designed for the North American market to charge plug-in electric vehicles (PHEV) and battery electric vehicles (BEV).

This document provides instructions for the EVSE2 Charging Station and is not for use for any other product. Before installation or use of this product, you should review this manual carefully and consult with a licensed contractor, licensed electrician, or trained installation expert to ensure compliance with building codes and safety standards.

2 Important Safety Warnings and Cautions

Please read and follow these safety Warnings and Cautions carefully before operating the EVSE2 Charging Station. Failure to follow these instructions may result in serious injury or property damage.

SAVE THESE INSTRUCTIONS!



WARNINGS

- ▶ When using electrical products, basic precautions should always be followed, including the following. This manual contains important instructions for model VSSM - 232NA25 that shall be followed during installation, operation, and maintenance of the unit.
- ▶ Read all the instructions before using this product.
- ▶ Children should be supervised when this product is used around children.
- ▶ Do not put fingers into the EVSE2 connector.
- ▶ Do not install the EVSE2 near flammable, explosive, or combustible materials. Do not locate or store flammable, explosive, or combustible materials near the EVSE2.
- ▶ Do not use this product if the flexible power cord or EVSE2 cable are frayed, have broken insulation, or display any other signs of damage.
- ▶ Do not use this product if the enclosure or the EVSE2 connector is broken, cracked, open, or show any other signs of damage.
- ▶ The EVSE2 contains no user-serviceable parts. Do not attempt to open, repair, or service the EVSE2 yourself. Do not attempt access to the internal components of the EVSE2 unit in any way. Do not tamper with any of the product labeling and/or the clear back overlay that is meant for North Shore Safety technical maintenance personnel only. If the EVSE2 requires servicing, contact North Shore Safety.

- ▶ Disconnect main service power to the EVSE2 before cleaning the unit. Do not use cleaning solvents to clean any part of the EVSE2. Clean enclosure, cable, and connector with a clean, dry cloth to remove dust and dirt accumulation.
- ▶ Disconnect main service supply or unplug unit to achieve electrical isolation.
- ▶ If the EVSE2 fails to operate correctly in accordance with the operation manual, do not use this device. Contact North Shore Safety for repair or replacement.
- ▶ Improper installation of the EVSE2 can result in personal injury or product damage.
- ▶ This EVSE2 installation guide is not a substitute for electrical safety precautions.
- ▶ Use this EVSE2 within the specified operating parameters. Failure to do so may result in injury or death.
- ▶ Locate and install this EVSE2 in a location where the charge cable will not be stepped on, tripped over, or subject to damage or stress.
- ▶ The EVSE 2 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 on the EVSE2.
- ▶ DO NOT USE AN EXTENSION CORD ON THE EVSE2. This can cause a shorting or over-heating condition that could lead to injury or death.



CAUTIONS

- ▶ Incorrect installation of the EVSE2 can result in damage to the vehicle's battery and to the EVSE2 itself. These damages will void the warranty for the vehicle and the EVSE2.
- ▶ Do not operate the EVSE2 in temperatures beyond its operating range of -31°F to +122°F (-35°C to +50°C).

3 Regulatory Information

3.1 Regulatory Information

At the end of service life, the EVSE2 should be recycled according to local laws and regulations.

3.2 Product Specification

All EVSE2 specifications and descriptions are accurate at the time of this document's printing. We always strive to constantly improve and update our products. North Shore Safety reserves the right to make changes at any time, without notice and without obligation.

3.3 Radio and Television Interference

The equipment described in this manual 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 EVSE2 operations. If interference to the EVSE2 occurs during charging, contact North Shore Safety.

4 Features and Specifications

The EVSE2 includes ground-fault protection, automatic reset upon grid power loss, ground assurance monitoring, and self-testing capabilities. Manual resetting of the EVSE2 is not necessary.

4.1 Ground Fault Protection

Continually provides a safe power supply to the vehicle. If a ground fault is present, the EVSE2 detects it and cuts power flow, protecting people and the vehicle from an electric shock hazard.

4.2 Automatic Reset

If main line side power supply is interrupted during charging, the EVSE2 will reset itself automatically and reattempt charging after main line side power supply is restored.

If the problem is associated with a ground fault, the EVSE2 makes automatic reset attempts in sequential 15 second periods. If the charging mode can not be restored, the appropriate failure indication of a solid red. Status light will appear on the unit's front panel.

See the Power and Status LED Indications Table (page 19).

The automatic reset feature ensures that your vehicle will be charged and ready to use by automatically restoring power after temporary interruptions (grid-power outages, temporary ground faults, and power surges).

4.3 Ground Assurance Monitoring

A proper electrical ground is critical to reliable groundfault protection. The EVSE2 includes a ground monitoring circuit to assure presence of a safe electrical ground.

4.4 Self-Testing

To assure proper functionality and safety, the EVSE2 includes self-testing and diagnostics circuitry, which is automatically performed prior to each charging cycle. circuit to assure presence of a safe electrical ground.

Product Features

Technical Specifications

Ground Fault Trip Level	18 mA (nominal; 20mA Max) (US)
Ground Assurance	50K ohm Max (US), 120VAC-Earth
Ground Fault Test	Automatic before each cycle (Firmware controlled)
Ground Fault Retry	Automatic retries at 15-sec intervals (per UL2231-2)
Stop Charge	Manual, 2 minute time-out
Master Clear	For System Reset (Overrides Ground Fault Retry and all other fault conditions)
Power Indication	Amber LED
Charge Status Indicators	Amber (Ready) Cyan (EV Plugged In) Green/Blue Flashing (Charging) Red Flashing (Fault) (see tables)
Ratings and Agency Approvals	<p><u>Agency Approvals</u> Standard Compliances through a National Registered Testing Lab (NRTL)</p> <p><u>North American (US) Operation</u> UL 2594 Ed. 2 (2016) UL 2251 UL 2231-1 & -2 Ed. 2 (2016) UL1998 SAE J1772 NEC Article 625 (2017)</p>

Voltage and Wiring (120V above ground)	<p>* 240VAC single-phase (US): L1, L2, and safety ground. *208VAC 3-phase, wye-connected (US): Any 2 phases and safety ground. * 240VAC 3-phase, delta-connected (US): with center tap on one leg. 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 (208VAC to ground "stinger")</p>
Product Usage	Unit must be properly secured to a vertical surface and is rated for stationary use only.
Dimensions & Weight	<p>Height = 9.0" (229mm) Width = 7.3" (185mm) Depth = 2.8" (71mm) Cable Length = 25ft(7.6m) per NEC625 Weight = 12-lbs (5.4kg)</p>
Input Voltage Phase AC	175 VAC – 264 VAC and 60Hz
Output Amperage	32A Max (model dependent)
Surge Protection	6kV @ 3000A
Temperature Storage	-40°F to +185°F (-40°C to +85°C)
Temperature Operating Humidity	-31°F to +122°F (-35°C to +50°C) Up to 95% non-condensing
Enclosure	NEMA 3R (rain-proof) & per UL 50E

5 Applicable Electrical Systems

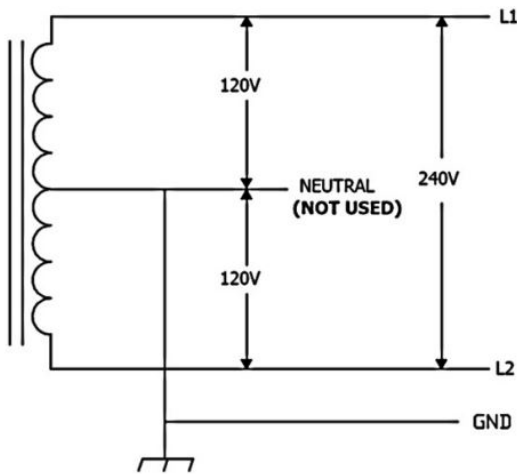
⚠ IMPORTANT Identify the onsite service connection before installing the EVSE2. If you are unsure of the available service connection, consult the local utility company.

DO NOT USE AN EXTENSION CORD ON THE EVSE2. This can cause a shorting or over-heating condition that could lead to injury or death.

The L1, L2, and Ground outputs in the following illustrations correspond to the inputs on the EVSE2. For the (earth) ground connection, always connect the neutral at the service panel to earth ground. Ground fault protection is not possible unless the neutral (center tap on the service transformer) is connected to an earth ground.

5.1 Applicable US Systems

5.1.1 220/240V Single Phase Connection



220/240V Single Phase (US)

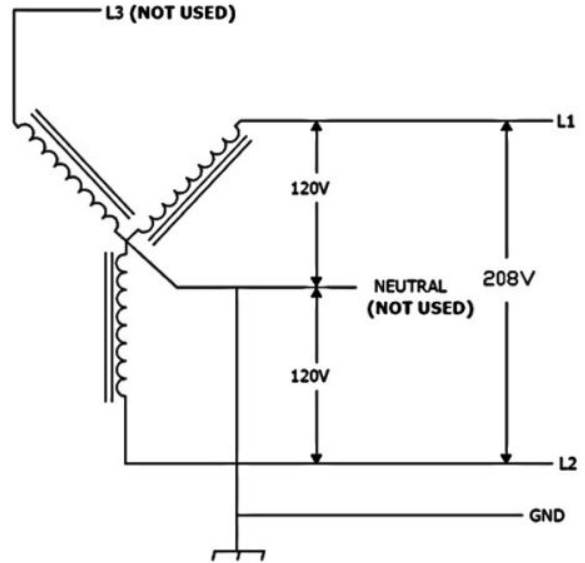
⚠ WARNING: The EVSE2 is a single-phase device. Do not connect all three phases of a 3-phase feed. Only three wires are connected (2 conductors and 1 ground). Take care that the service transformer secondary connection is known and that the three wires from the mainpanel circuit breaker are correctly connected and labeled.

⚠ WARNING: The EVSE2 must be installed by a licensed electrician and in accordance with all local electrical codes, ordinances, and authorities having jurisdiction.

⚠ WARNING: Do not install the EVSE2 near flammable, explosive, or combustible materials. Do not locate or store flammable, explosive, or combustible materials near the EVSE2.

5.1.2 208V 3-Phase Wye Connection

Any two of the legs can be used to provide 208V to the EVSE2 with a Wye-connected secondary. For example, L1 and L2, or L1 and L3, or L2 and L3. Reference the wiring diagram below.



208V 3-Phase Wye Connection (US)

NOTE: A current-carrying neutral is not required for the Charging Station for 208V connections.

5.1.3 Wall Receptacle Geometry

The drawing below represents the appropriate wall receptacle of EVSE2 plugs-in. This receptacle is to be installed by a licensed electrician.



NEMA 6-50 Receptacle (US)

5.2 Electrical Requirements


CAUTIONS


The AC electrical connection must have a grounded, dedicated servicemain. No other loads shall be connected to the same circuit. Use of a non-dedicated circuit could exceed the current rating of the circuit breaker and cause it to trip or open.

CAUTIONS

Do not use portable or stationary backup generating equipment to charge the vehicle. This may cause damage to the vehicle's charging system. Only charge the vehicle from utility-supplied power.

5.3 Grounding Instructions

 **WARNING: This product must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.**

 **WARNING: Improper connection of the equipment grounding conductor is liable to 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. Do not modify the plug provided with the product; if it will not fit the outlet, have a proper outlet installed by a qualified electrician.**

6 Amperage and Breaker Parameters

The EVSE2 has been factory set at an output current setting of 4 for Table 1 and 5 for Tables 2 and 3. For all other amperages, changes to output amperage may be made by a qualified electrician as follows:

1. Unplug the EVSE2 from the wall outlet and turn power off to the outlet at the breaker panel.
2. Remove the adhesive overlay from the molded well on the back of the EVSE2.
3. Using a small flat-blade screwdriver, set the current-adjustment selector to the applicable output current-limiting setting indicated in the appropriate table below.

NOTE:

1. North American current setting is 30A (setting 4). This setting is **NOT** to be exceeded. Settings of 30A or less (settings 1-4) only are permitted on North American models.
2. Adhesive overlay must be replaced securely to the molded well to preserve the EVSE2’s environmental ratings and warranty.

Table-1 - North American Current Adjustment Settings		
Current Adjustment Selector Setting	Output (Amps)	Corresponding Breaker Required
1	12	15
2	16	20
3	24	30
4	32	40
5	32	40

7 Mounting Instructions

7.1 Package Contents

- ▶ (1)EVSE2 Series Charging Station
- ▶ (1)EVSE2 Series Charging Station hardware kit:
 - (2) #8 x 1-1/4" Pan-head Screws (for EVSE2 stud-mount applications)
 - (2) 3/16" x 1-1/4" (5mm) Tapered-head Masonry Screws (for EVSE2 masonry-mount applications)
- ▶ (1) EVSE2 Cord-set Hanger
- ▶ EVSE2 Cord-set Hanger hardware kit:
 - (2) Cord-set Hanger Spacers
 - (2) #10 x 2-1/2" Philips Black-oxide Screws (for Cordset Hanger stud-mount applications)
 - (2) 3/16"(5mm) x 2-1/4" Flat-head Philips Masonry Screws (for Cord-set Hanger masonry-mount applications)

7.2 Tools Required for Package Contents

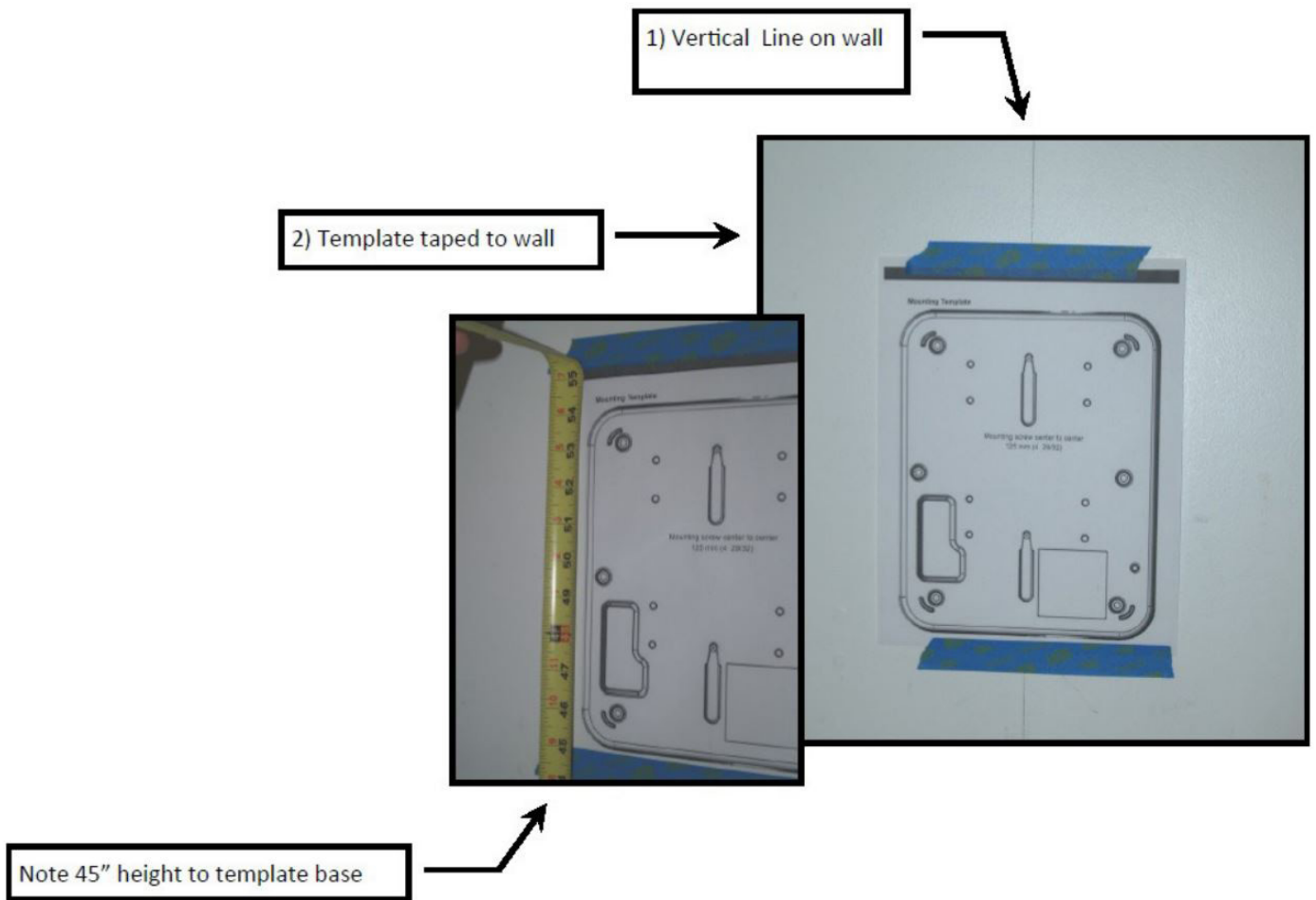
- ▶ (1)EVSE2 Series Charging Station
- ▶ (1)EVSE2 Series Charging Station hardware kit:
 - (2) #8 x 1-1/4" Pan-head Screws (for EVSE2 stud-mount applications)
 - (2) 3/16" x 1-1/4" (5mm) Tapered-head Masonry Screws (for EVSE2 masonry-mount applications)
- ▶ (1) EVSE2 Cord-set Hanger
- ▶ EVSE2 Cord-set Hanger hardware kit:
 - (2) Cord-set Hanger Spacers
 - (2) #10 x 2-1/2" Philips Black-oxide Screws (for Cordset Hanger stud-mount applications)
 - (2) 3/16"(5mm) x 2-1/4" Flat-head Philips Masonry Screws (for Cord-set Hanger masonry-mount applications)

7.3 Finished Wall Installation

⚠ WARNING: Read all instructions before installing the EVSE2

Ideally, the EVSE2 should be mounted to the studs of a drywall/wood-stud structure, or to a masonry-wall. For a drywall / wood-stud structure the EVSE2 is specifically designed to be secured to the studs. This is the reason the two mounting slots are designed into the EVSE2's back mounting surface in a centered, vertical in-line configuration (not unlike that of a standard multi-plug power-strip).

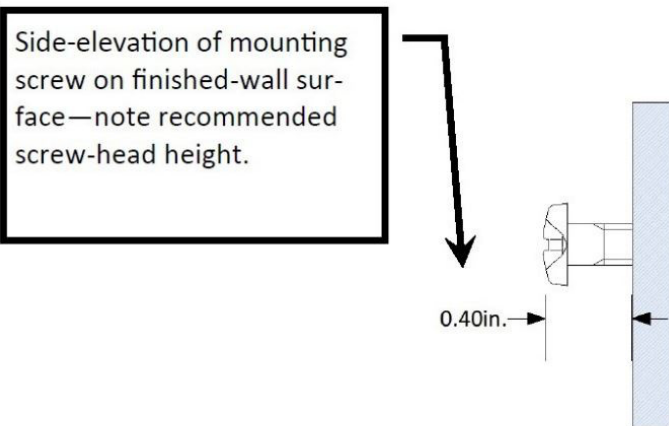
1. Using a stud finder, locate the desired mounting points for the EVSE2's two (2) mounting screws (denoted on the template with the symbols), and draw a vertical line to mark the stud site.
2. Using adhesive tape, secure the mounting template (included on page 18 of this manual) to the desired mounting location wall surface. Mount the template at a height of 45" from the floor to the bottom of the template.



- Using a 1/8" (3-mm) drill bit, drill 2-holes at the target-points on the template. These two points are vertically located with reference to each other (they are also 4.9 in [125-mm] apart).



- Install two (2) #8 pan-head screws to the screw holes; drive these screws leaving a 0.40" space from the top of the screw head to the wall surface. This will provide the proper spacing required for the mounting slots on the back of the unit.



5. Align the EVSE2 to the mounting screws and gently slide the unit down to secure it within the rear mounting slots. Plug the EVSE2 into the appropriate, existing power receptacle.

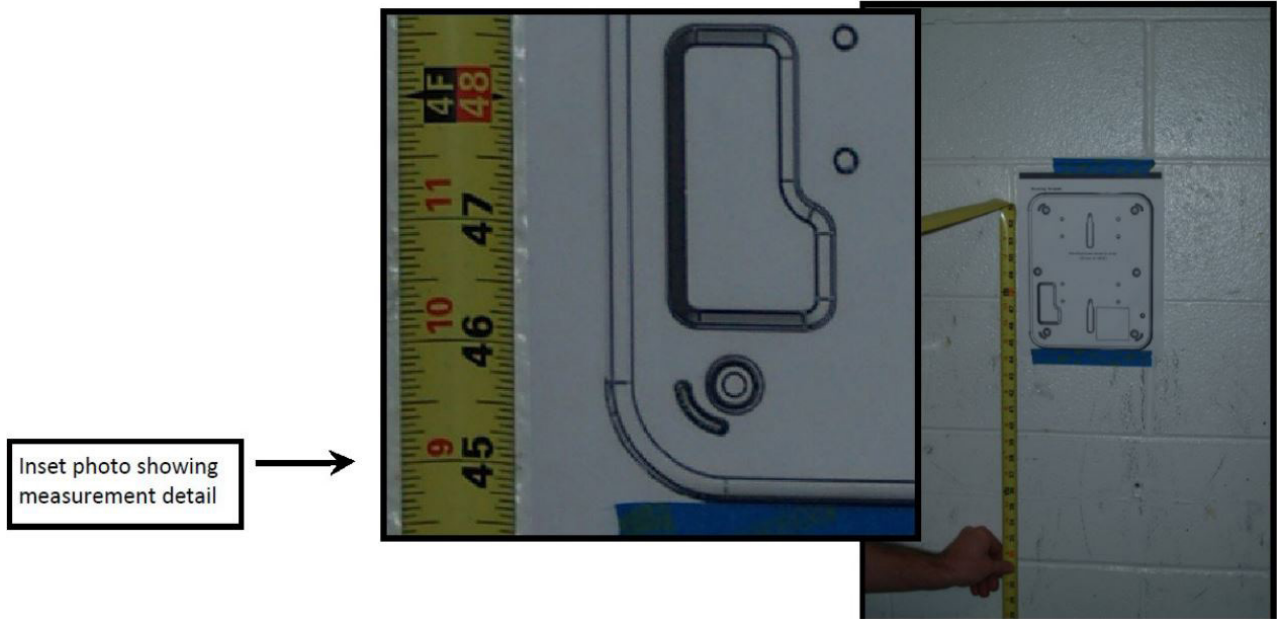
NOTE: The EVSE2 has 4 radiused corner standoffs that must be touching the wall-mounting surface to assure stability. Tighten the 2 mounting screws as needed to accomplish this.

Hold unit with both hands, locate screw-hole keys (2) on back of unit, seat the unit and gently slide the unit down until it stops on the mounting screws



7.4 Masonry Wall Installation

- Using adhesive tape, secure the mounting template (included on page 18 of this manual) to the desired mounting location on the wall surface. Mount the template at a height of 45" from the floor to the bottom of the template.

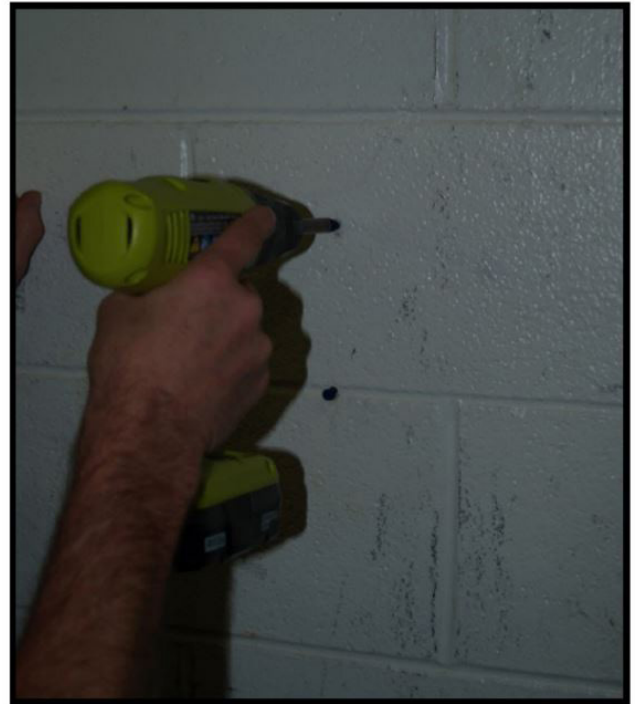
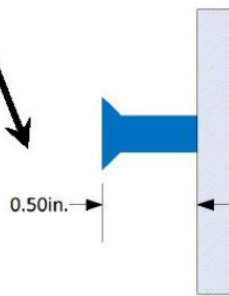


- Using a 1/8" (3-mm) masonry drill bit, drill 2-holes at the target-points (denoted with the symbol) on the template. These two points are vertically located with reference to each other. (They are also 4.9 in [125-mm] apart.)



- Remove the template from the wall and install two (2) 3/16" (5-mm) tapered-head masonry screws. Drive these screws leaving a 1/2" space from the top of the screw head to the wall surface. This will provide the proper spacing required for the mounting slots on the back of the unit.

Side-elevation of mounting screw on finished-wall surface—note recommended screw-head height.



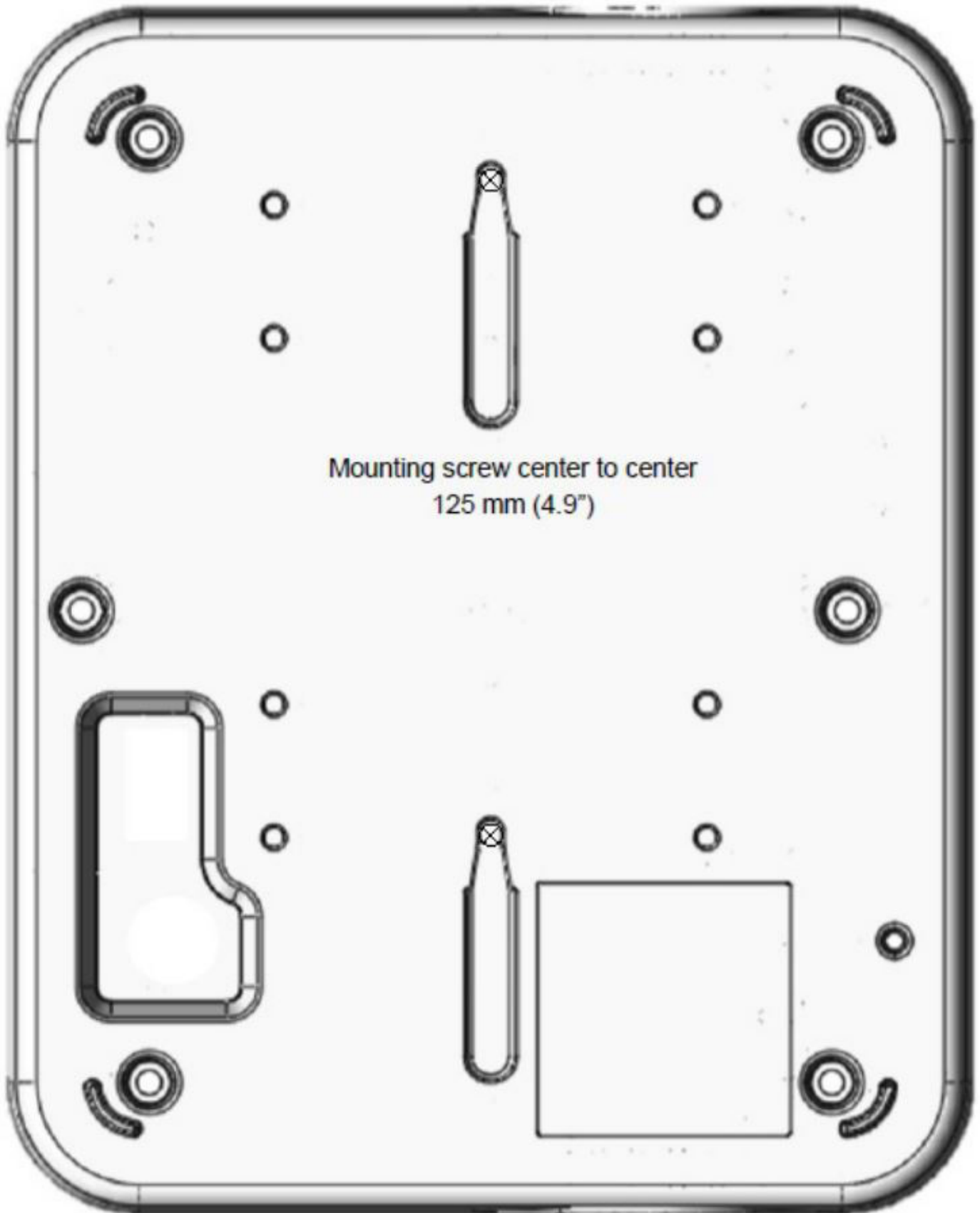
- Align the EVSE2 to the mounting screws and gently slide the unit down to secure it within the rear mounting slots. Plug the EVSE2 into the appropriate, existing power receptacle.

NOTE: The EVSE2 has 4 radiused corner standoffs that must be touching the wall-mounting surface to assure stability. Tighten the 2 mounting screws as needed to accomplish this.

Hold unit with both hands, locate screw-hole keys (2) on back of unit, seat the unit and gently slide the unit down until it stops on the mounting screws

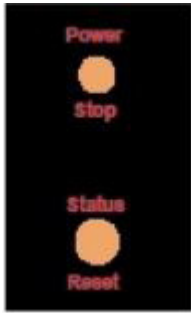


7.5 Mounting Template

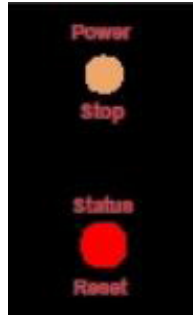


8 Power and Status LED Indications

Operating Instructions - Power and Status LED Indications

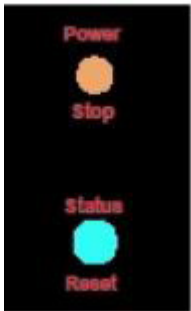


Normal standby indication, both lights are amber.

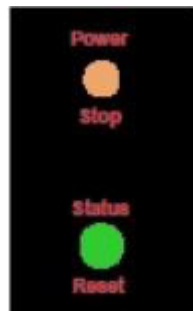


Apply AC power. If Status light blinks red, uncouple vehicle and press the reset button to begin self test. If the error persists, there may be an AC power problem such as incorrect voltage, grounding, or polarity. For safety, turn off AC breaker at panel, uncouple vehicle if connected; contact a service professional. Do not re-power.

EVSE2 Status - Vehicle not coupled.



Power on, status light is cyan. This indicates a normal start or stop of the charging sequence between the EVSE2 and the vehicle.



Power on, status light is green. This indicates either that charging has completed or that the vehicle has decided to delay charging.

EVSE2 Status - Vehicle has just coupled; systems communicate desired power; beginning (or ending) of charging



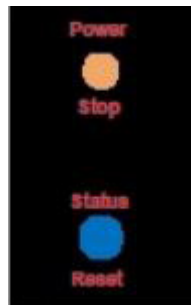
Power on, status light is a slow blue/green transition.

Normal charging in progress

Charging completes automatically or when the stop button is pressed

Charging resumes automatically, with vehicle request, if power is lost and restored.

EVSE2 Status - Normal charging operation




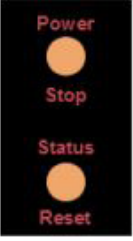
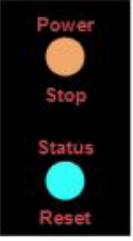



After pressing the power/stop button, a steady blue indicator lights for a 2-minute period during which the vehicle can be uncoupled. If the coupler is latched, press the stop button again. Once uncoupled, both indicators turn to standby.

See advanced details of operation on the following page.



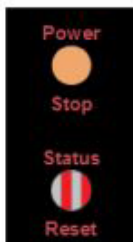
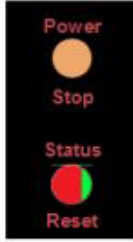
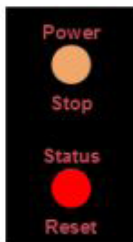
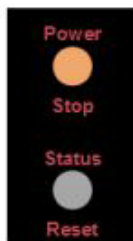
EVSE2 Status - Manual end of charge to uncouple

Power and Status LED Indications (cont'd)

Normal Charging Sequence

	Supply power is off	Indicators are dark
	Supply power is on; no vehicle connected	Both indicators are steady amber
	Vehicle connects; system normal; EVSE2 communicates...	Status indicator is cyan
	Normal charging	Color alternates blue/green
	Charge completed	Steady green;
	Supply power is on; vehicle disconnected	Steady amber

9 Troubleshooting

	Connection to vehicle unsatisfactory. First, press reset button on EVSE2. If needed, then try removing and re-inserting coupler to vehicle	Short red flash
	EVSE2 over-heated (this may be caused ambient temperature exceeding 50C (122F). After cooling system may restart	Dim red; bright red flash
	Safety ground not detected (do not touch vehicle) or wrong supply voltage detected Supply power must be disconnected at disconnect or breaker before servicing	Fast-blinking red
	Momentary fault - EVSE2 retries automatically in 16 seconds	Red; short green flash
	GROUND FAULT or system failure, Remove coupler then press EVSE2 reset button Otherwise, supply power must be disconnected at disconnect or breaker	Steady red
	Remove coupler then press EVSE2 reset button EVSE2 failure Otherwise, supply power must be disconnected at disconnect or breaker before servicing	Indicator dark

10 Miscellaneous

10.1 Maintenance



WARNING: Do not attempt to service the EVSE2. The EVSE2 has no user-serviceable components.

If the unit is not operating properly, contact North Shore Safety at 1-877-4SAFE4U (472-3348) for assistance. The EVSE2 requires no scheduled maintenance, only periodic cleaning.

Always be sure to return the charging cable and coupler to its proper storage area to avoid potential damage to the unit and to prevent potential trip hazards.

Regularly inspect the EVSE2 unit and charging cable for signs of damage. If the EVSE2 unit or charging cable are damaged, contact North Shore Safety for service or repair.

10.2 Cleaning



CAUTION

Always turn off service power (supply-side power at the main service panel) before cleaning the EVSE2 and/or charging cable.



CAUTION

Never use cleaning solvents, abrasive powders/liquids or scouring pads to clean the EVSE2 and cable/coupler.

Clean the EVSE2 unit and cable/coupler with a soft damp or dry cloth to remove dust or dirt.

10.3 Storage and Moving

Unit storage temperature range: -40°F to +185°F (-40°C to +85°C). When transporting the EVSE2 unit, do not carry by only the plug or by the charging cable.

Contact North Shore Safety for EVSE2 relocation or storage requirements at 1-877-4SAFE4U (472-3348).

11 Warranty

North Shore Safety warrants to the consumer its Line-Gard products to be free from defects in materials and workmanship, under normal use and service, for a period of two years from date of purchase. North Shore Safety, at its option, will repair or replace the defective products without charge within 2-years of the date of the product's purchase provided that the defect occurred during normal use. The defective unit must be returned freight prepaid, with a RGA (Returned Goods Authorization) including a description of the problem, and a proof of purchase date to the Quality Assurance Dept. North Shore Safety, Ltd. 7335 Production Drive, Mentor, OH 44060.

North Shore Safety will not be liable, directly or indirectly, for installation or removal of this device, or for any personal injury, or property damages, or incidental, indirect, or consequential damages of any kind, as a result of a defective device. The

exclusive remedy, under this warranty, is the repair or replacement of the defective device. In no case shall North Shore Safety's liability exceed the purchase price. This warranty is void or not covered if this device is found to be: not properly installed, tampered with, not used according to label instructions and ratings, enclosure breached (button cover label, conduit hubs, vent, or lid fasteners), surged, short circuited, or abused.