



Zemetric Shasta-160 EVSE

Installation Manual

Version 1.1



IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

1. Zemetric Shasta-160 EVSE

Zemetric Shasta-160 EVSE is a powerful AC EV charger that is capable of charging two electric vehicles concurrently at up to 19.2kW each. The unit comes with dual 25 feet charging cables attached with SAE J1772 standard charging plug (also called connector)

2. Copyrights and Trademarks

All information in this document is subject to copyright and other intellectual property rights of Zemetric, Inc and may not be modified, reproduced, or copied, in whole or in part, without the prior written permission of Zemetric, Inc. Additional information will be made available upon request.

3. About this manual

This manual provides the following information for Zemetric Shasta-160 EVSE

- Safety Guidelines
- Technical specifications
- Dimensions
- Features
- Installation instructions
- Operating instructions

The contents of this manual are subject to change, therefore always refer to the latest version of the document.

This manual is intended for qualified installation persons who:

- Fully understand the specifications of the unit and process to safely install the unit
- Are qualified to do installation per applicable local rules

It is the responsibility of customer to make sure that installation persons obey local and state regulations, installation instructions and safety guidelines.

The symbols used in this manual have the following meaning:



WARNING: RISK OF ELECTRIC SHOCK



WARNING: RISK OF PERSONAL INJURY



WARNING: RISK OF FIRE



WARNING: RISK OF DAMAGE TO EQUIPMENT

4. [Errors, inaccuracies, and feedback](#)

Any inaccuracies, omissions, questions, or any feedback on this document should be sent to feedback@zemetric.com

5. Table of contents

1.	ZEMETRIC SHASTA-160 EVSE	3
2.	COPYRIGHTS AND TRADEMARKS	3
3.	ABOUT THIS MANUAL	3
4.	ERRORS, INACCURACIES, AND FEEDBACK	4
5.	TABLE OF CONTENTS	5
6.	SAFETY GUIDELINES.....	6
7.	SPECIFICATIONS.....	7
8.	DIMENSIONS	9
9.	MAX COMBINED CONCURRENT OUTPUT ON EACH CHARGING PLUG	11
10.	INSTALLATION	11
	<i>a. Unpacking</i>	<i>11</i>
	<i>b. Wall Mounting Instructions</i>	<i>12</i>
	<i>c. Electrical Wiring Instructions</i>	<i>13</i>
	17	
11.	OPERATION	17
	<i>a. Non-Networked Mode Operating Instructions</i>	<i>17</i>
	<i>b. Networked Mode Operating Instructions</i>	<i>18</i>

6. Safety Guidelines

This manual contains important instructions and warnings that must be followed when installing and maintaining the unit

INSTRUCTIONS PERTAINING TO RISK OF FIRE OR ELECTRIC SHOCK



CAUTION: TO REDUCE RISK OF FIRE

- Connect only to a circuit provided with the minimum branch circuit overcurrent protection requirements in accordance with the National Electrical Code, ANSI/NFPA 70, and the Canadian Electrical Code, Part I, C22.1.



WARNINGS: RISK OF ELECTRIC SHOCK

- The unit must be installed and serviced by only trained, skilled and qualified electricians who are familiar with the assembly and operation of the unit. These personnel should have proper personal protective and safety equipment.
- All installations must be done in accordance with the regional electric code safety standards. All installations must conform to the laws, regulations, codes, and standards applicable by local authorities having jurisdiction.
- Turn off power at the mains and secure against restart before installing or performing any maintenance operation on the unit.
- The working area must be secured in accordance with regional regulations.
- Appropriate cordoning off equipment must be used where necessary.
- The unit must be grounded through a permanent wiring system.
- Never spray water or any liquid on the unit or any parts of its assembly, including cables and plugs. Never submerge the unit or any parts of its assembly in water or any liquid.
- Do not touch unit's end terminals with fingers or any metallic object.

- The unit cabinet door must be kept closed and latched.
- The unit must not be operated outside its listed temperature range.
- Do not use this product if the flexible power cord or EV cable is frayed, has broken insulation, or any other signs of damage.
- Do not use this product if the enclosure or the EV connector is broken, cracked, open, or shows any other indication of damage.

INSTRUCTIONS PERTAINING TO RISK OF FIRE OR ELECTRIC SHOCK



WARNING: TO REFUCE THE RISK OF PERSONAL INJURY

- The charging plugs must be docked in the holder. Charging cables must not be left in a way that it creates tripping hazard or any other danger.

7. Specifications

Features	
Charging Mode	Level 2 AC
Charging Plug Type and cable	Dual connectors and cables, SAE J1772 connectors, 208-240V 80A charging cable, 20 or 25 feet
Max Output	19.2 kW AC on each SAE J1772 connector
Mounting	Wall mount
HMI	LCD display
Advanced load management	Load sharing across connectors from the same input source
Electrical specifications	
Input supply	208-240V AC 80A or 160A (max) AC 60Hz
Network	Single phase
Energy metering	Class 1 compliant accuracy

Ground Fault Protection	20 mA
Over Current Protection	80A per J1772 connector, Over Voltage, Under Voltage and Over Temperature protection
Open Ground Monitoring	Yes
Design	
Environmental rating	Indoor and Outdoor, NEMA 3R IP66
Dimensions	520mm x 410mm x 130mm
Weight	Approx. 67 lbs (charging cables weight included)
Ambient conditions	Operating temperature: -35°C to 50°C (-31°F to 122°F), Storage Temp.: -40°C to 60°C (-40°F to 140°F), 98% non-condensing Operating Altitude: 9,840 feet
Compliance and Protocols	
UL listed	UL 2594, UL 2231-1, UL 2231-2, UL 1998
Communication	
Interfaces	Ethernet, Wi-Fi, Cellular LTE, WCDMA, Modbus RS-485, Modbus TCP-IP
Communication protocol with OCPP backend	OCPP 1.6j, OCPP 2.0 upgradable
Software upgrade	Over the Air (OTA)
User authentication	RFID

8. Dimensions

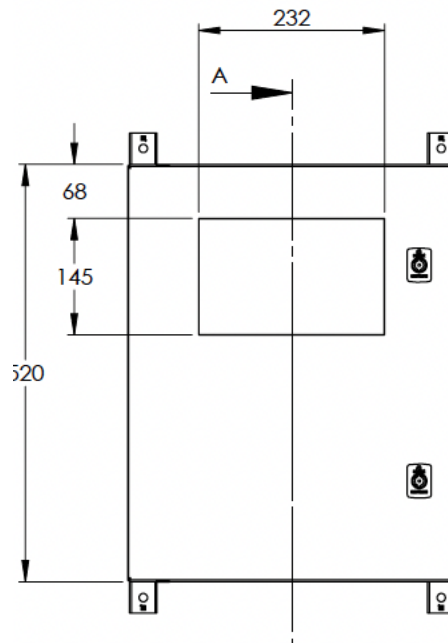


Figure 1

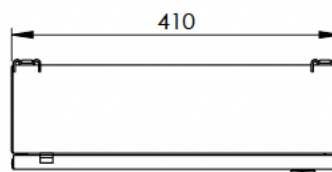


Figure 2

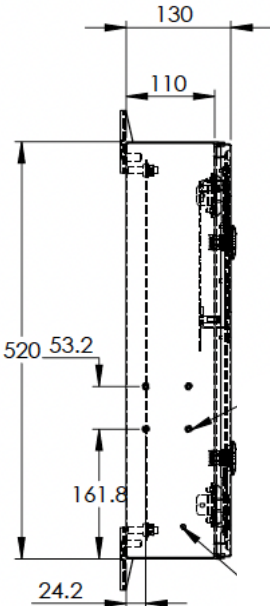


Figure 3

9. Max combined concurrent output on each charging plug

Dip Switch combination	Max current at each output	Max combined current for both output
Switch 1 Position Down	80A	80A
Switch 1 Position Up	80A	160A

10. Installation

INSTALLATION INSTRUCTIONS



WARNING: Installation must be performed by authorized trained and certified personnel. Must read and comply with Safety Guidelines. Disconnect power supply from the breaker before installing, repair or adjusting the unit.



WARNING: Read all instructions before installing and operating this unit



WARNING: Do not use the unit if there is any damage on the power cable, charging cables or plugs



CAUTION: Ensure that there is sufficient free space to install the unit



WARNING: To reduce the risk of personal injury, make sure that at-least two qualified persons are available for installation

a. Unpacking

- Open the box

- Remove packaging material
- Remove the surrounding cardboard
- Take out the unit along with the attached cables and plugs from the box

b. Wall Mounting Instructions

The unit must be mounted at a height from ground such of not less than 450 mm (18 in.) and not more than 1.2 m (4 ft) above the floor level for indoor and outdoor locations above the grade level, per NEC Article 625.

Mark the locations of all mounting holes

Drill the mounting holes on the wall at marked locations

Insert the anchors into all mounting holes

Hold the unit against the wall and line up the holes on the top and bottom mounting plates of the unit with the mounting holes on the wall

Secure the unit to the wall with appropriate mounting screws

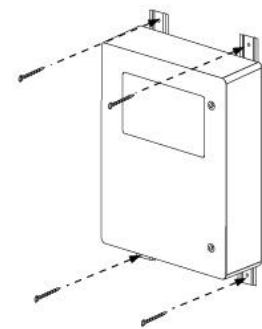


Figure 4

c. Electrical Wiring Instructions

Recommended Tools

- Ring Wire Terminals – 1AWG-4AWG (L1, L2, G), Stud size 1/4 “, Copper construction or Copper construction with tin plated
- Crimping tool for Ring Wire Terminals
- Socket Screwdriver - # 10
- Heat shrink tubes

The unit can operate at two input supply current settings: 80A and 160A (80Ax2)

- **If the maximum total input current supply to the unit is 80A then make sure that dip switch 1 is down.** In this configuration, the maximum combined output on both charging plugs will not exceed 80A.
- **If the maximum input current supply to the unit is 160A, then set the dip switch 1 to up.** In this configuration, the unit will be able to charge two vehicles at 80A concurrently.

***PLEASE NOTE THAT EACH INPUT BRANCH CIRCUIT TO THE UNIT HAS TO BE CONNECTED TO A MAX OF 100A CIRCUIT BREAKER. UPTO TWO INPUT BRANCH CIRCUITS OF 80A CAN BE USED TO SIMULTANEOUSLY OPERATE EACH OUTPUT AT 80A.**



CAUTION: Zemetric Shasta-160 EVSE is a single-phase device. Do not connect three phases from a three-phase feed

**INSTRUCTIONS TO WIRE THE UNIT WITH A SINGLE BRANCH CIRCUIT OF 80A
(REFER FIGURE 5)**

- For wiring with single 80A branch circuit:
 - Ensure that the amperage of input wires to the unit is rated at at-least 80A (at least 4AWG per current carrying conductor, at-least 6AWG grounding conductor).
- Using an appropriate tool, clamp a ring wire terminal to the copper wire. Use heat shrink tube to cover the non-insulated portion of terminal.
- Unlock the unit door using a Hex key or a screwdriver depending on the type of lock on the door.
- Unscrew the cable gland 1 at the bottom of the unit (see Figure 7.1) and pass the input wire through the cap of the gland into the unit box.
- Connect the input wires to the lugs on the unit board as marked in the picture 7.1.

TORQUE SETTINGS: 30in/lb

- Tighten the gland and lock it in place
- Close the unit door and lock it using a Hex key or a screwdriver depending on the type of lock on the door
- Turn on the power at the main breaker
- LCDs on the front of the unit should turn on and display message “Zemetric” accompanied with the software version on the display

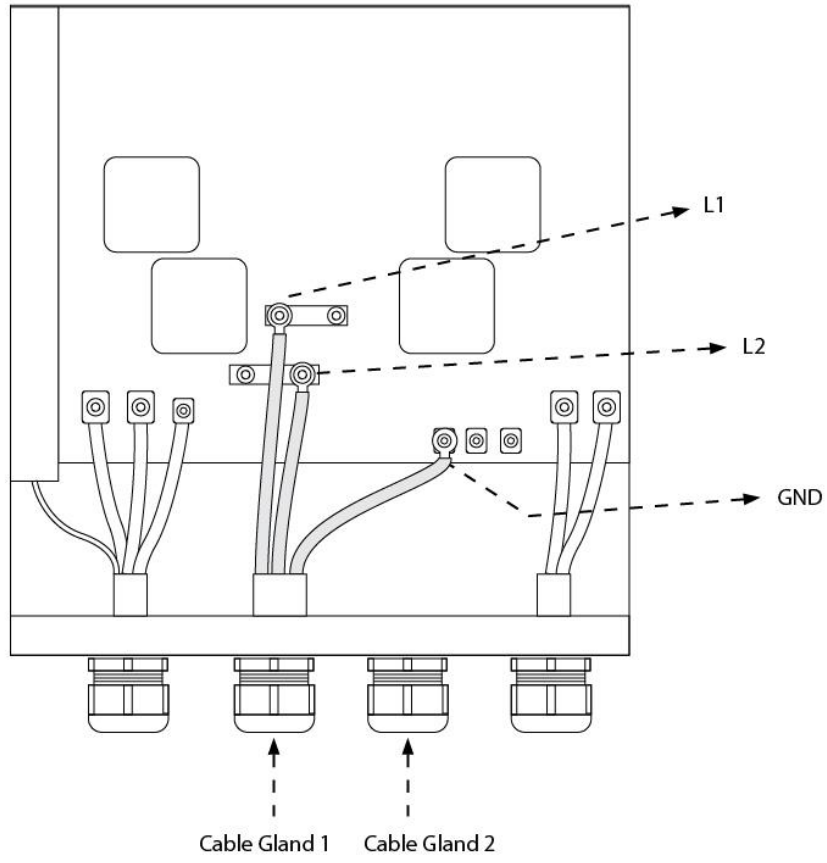


Figure 5

**INSTRUCTIONS TO WIRE THE UNIT WITH TWO BRANCH CIRCUITS OF 80A EACH
(REFER FIGURE 6):**

- Ensure that the amperage of input wires to the unit are rated at 80A (at least 4AWG per current carrying conductor, at-least 6AWG grounding conductor).
- Using an appropriate tool, clamp a ring wire terminal to the copper wire. Use heat shrink tube to cover the non-insulated portion of terminal.
- Unlock the unit door using a Hex key or a screwdriver depending on the type of lock on the door.
- Unscrew the cable gland 1 at the bottom of the unit and pass the input wire of the first branch circuit through the cap of the gland into the unit box.
- Remove the cable gland sealer and screw in the cable gland (included) in the opening marked cable gland 2 in Figure 7.2. Pass the input wire of the second branch circuit through the cap of the gland into the unit box.
- Connect the input wires to the lugs for each channel on the unit board as marked in the picture 7.2. **TORQUE SETTINGS: 30in/lb.**
- Tighten both cable glands and lock in place.
- Close the unit door and lock it using a Hex key or a screwdriver depending on the type of lock on the door.
- Turn on the power at the main breaker.
- LCDs on the front of the unit should turn on and display message "Zemetric" accompanied with the software version on the display.

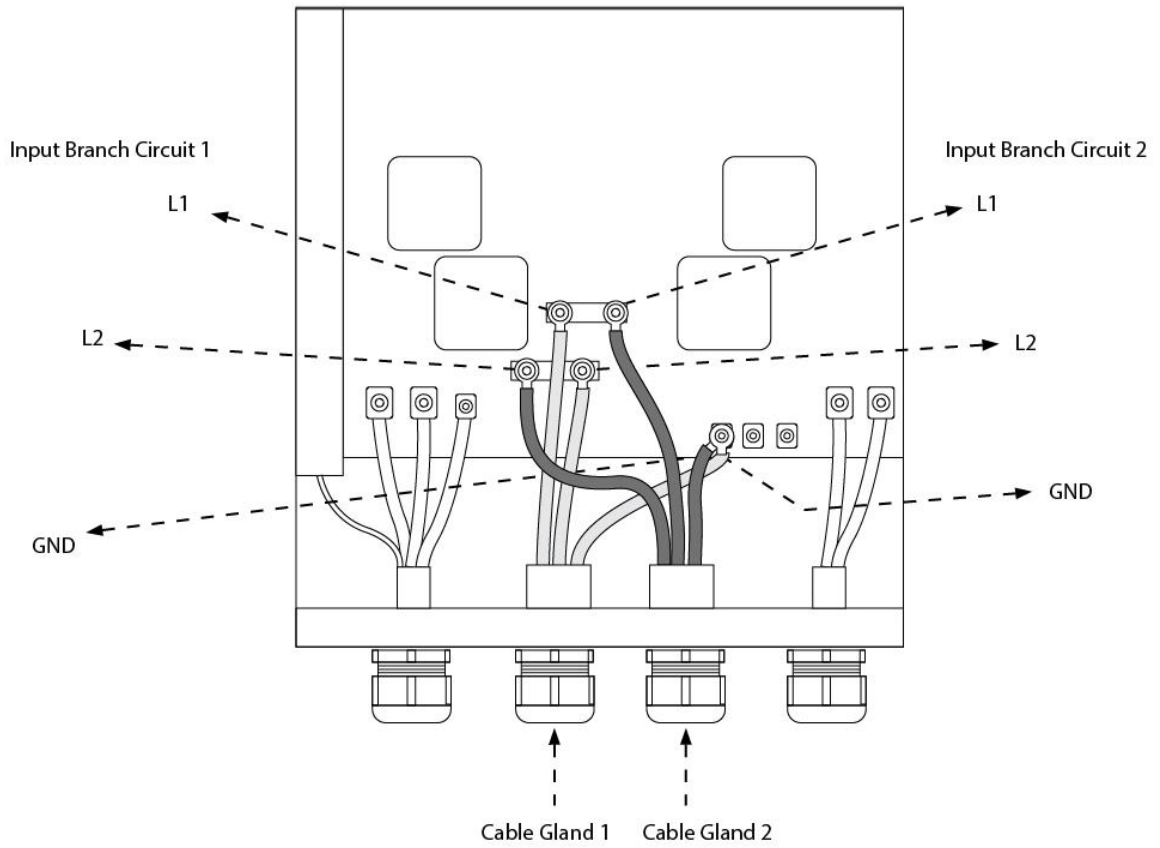


Figure 6

11. Operation

OPERATING INSTRUCTIONS

Zemetric unit can be configured to operate in the following modes

- Non-Networked Mode – DIP SWITCH 2 - UP
- Networked Mode – DIP SWITCH 2 - DOWN

a. Non-Networked Mode Operating Instructions

- i. Confirm that LCD display of one or both displays shows “Available”
- ii. Plug the cable into the charging port of the Electric Vehicle (EV)
- iii. LCD should show the messages in the following sequence:
 1. Plugged In
 2. Charging (when charging begins)

- iv. If the display continues to show Plugged In, ensure that the EV is not set to scheduled or delayed charging
- v. Once the EV starts charging, the LCD display on the unit will show the power (kW) and energy dispensed (kWh) values
- vi. Charging will be terminated when one of the following occurs:
 - 1. The EV reaches its battery target state of charge
 - 2. SAEJ1772 plug is disengaged or removed
 - 3. Input power to the unit is turned off

b. [Networked Mode Operating Instructions](#)

Contact Zemetric support and provide OCPP end point for the 3rd party EV charging service provider. Zemetric support will confirm after completing the provisioning of unit

Error Monitoring and Recovery

The unit monitors over current, over voltage, under voltage and over temperature conditions. In case of over current, the unit will stop the charging session for 30 seconds before resuming charging, for no more than 3 times

In case of CCID trip, the unit will stop the charging session for 15 minutes before resuming charging, for no more than 3 times.

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS