

The Boldest, Baddest Charging Station on the Planet!

WattZilla

WattZilla™ DUO and UNO Installation and Operation Guide

Software Version 3.19.0



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UL File # E473741

Product Description

- ◆ WattZilla is an electric vehicle charging station (EVCS), a category of EVSE charging equipment that is available from LiquidSky Technologies, Inc.
- ◆ WattZilla will charge any electronic device or vehicle that conforms to the J1772 charging standard, including electric cars, boats, motorcycles, snowmobiles, bicycles, campers, etc.
- ◆ WattZilla is the world's first dual 80 Amp EVCS. With WattZilla, you can simultaneously charge 2 electric vehicles (EVs) (e.g., the Tesla Model S) at the highest rate that the J1772 AC standard permits.
- ◆ WattZilla is designed for tough, all-weather environments and is built inside a Type 4X outdoor rated enclosure.
- ◆ WattZilla requires 208-240 VAC at 50/60 Hz, single phase. It requires two independent, properly fused and/or breakered 100 Amp circuits.
- ◆ WattZilla comes with two standard 24-foot cables complete with J1772 couplers.
- ◆ WattZilla is easy to use, virtually plug and play. When plugged in and charging, the front LCD shows the amperage being delivered by each side and the duration of the charge.
- ◆ WattZilla DUO/UNO are each warrantied for both commercial and residential use.

About the WattZilla LCD

The LCD displays the operational status of each side of WattZilla, including the charging duration and the total number of Amps being delivered to the EV at that moment in time. The LCD codes displayed inside the WattZilla enclosure are visible through the viewing lenses on the cover of the enclosure. (See examples of the WattZilla LCD codes in [Figure 1](#).) Information displayed on the LCD is color coded with the following meanings:

- ◆ **Green** — indicates the normal operational state.
- ◆ **Blue** — indicates a transitional state occurring when changing operational states.
- ◆ **Red** — indicates an error.



Figure 1. Examples of the WattZilla LCD Codes

Enclosure Wall Mounting Instructions

The procedure in this section describes how to wall mount either the WattZilla DUO or WattZilla UNO enclosure. You can either wall mount the enclosure directly to a single wall stud or to plywood that attaches to at least two wall studs. For simplicity, the illustrations show the WattZilla DUO only.



Note: When installing onto a single stud, two people are needed to install the enclosure.

Ensure that the enclosure is mounted in accordance with your local requirements. Consult with your local building inspector for more information.

PREREQUISITES:

- Wattzilla wall mounting template
 - Plywood (customer supplied), 18 in. W x 16 in. H, 1/2 in. thick (or larger)
 - (6) stainless, corrosion-proof, 1/4 in.-7 x 1 1/4 in. hex lag screws
 - Stud finder (as necessary), screwdriver, plaster and paint (customer supplied)
1. Choose the appropriate installation method (step 1a or 1b), and then proceed to the next step for detailed instructions (reference [Figure 2](#)):
 - a. **Plywood Wall Mounting** — (Preferred Method) Attach plywood to at least two wall studs, and then mount the enclosure onto the plywood.
 - b. **Single Stud Wall Mounting** — Using the two center holes of the enclosure, mount the enclosure directly to a single wall stud.

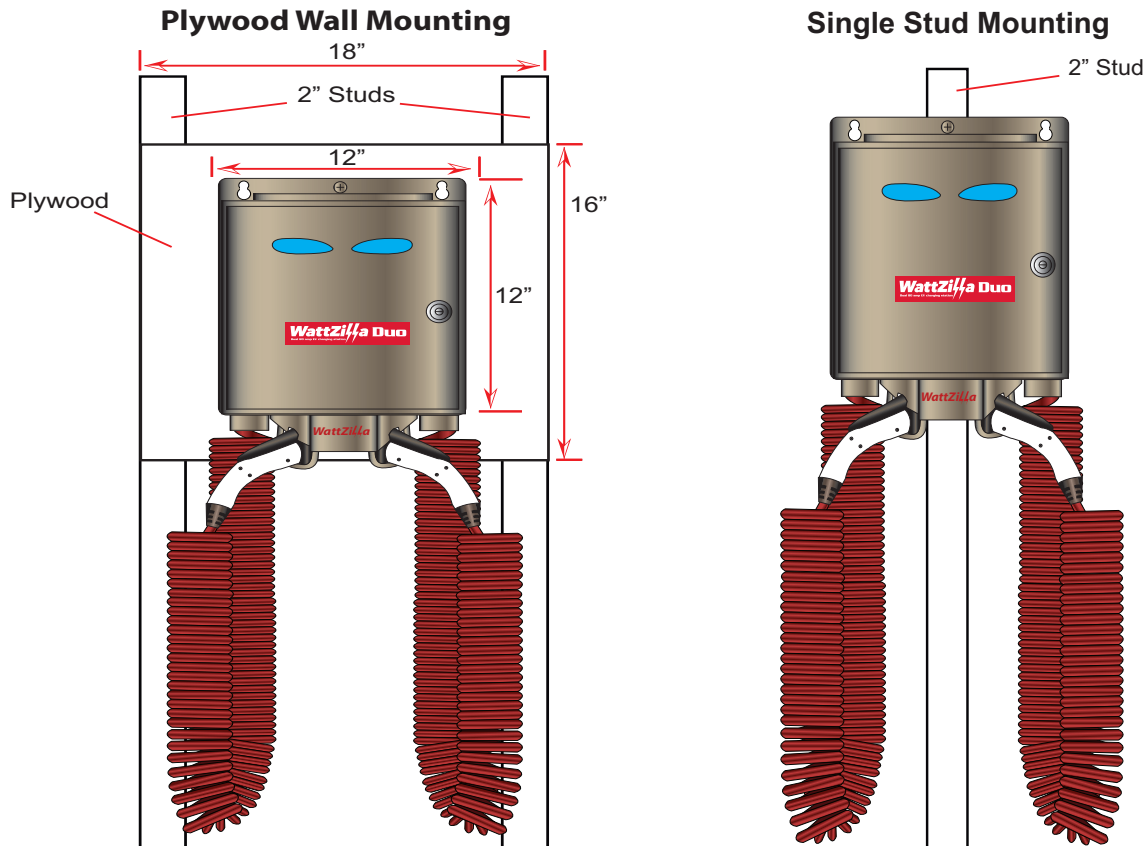


Figure 2. WattZilla Wall Mounting Options

2. For plywood wall mounting, follow these steps:
 - a. Locate two studs into which to install the plywood.
 - b. Identify and mark an installation area on the drywall between the outer edge of each stud that matches the size of the plywood (at least 18 in. W x 16 in. H) ([Figure 3](#)). Then cut out that area of the drywall.

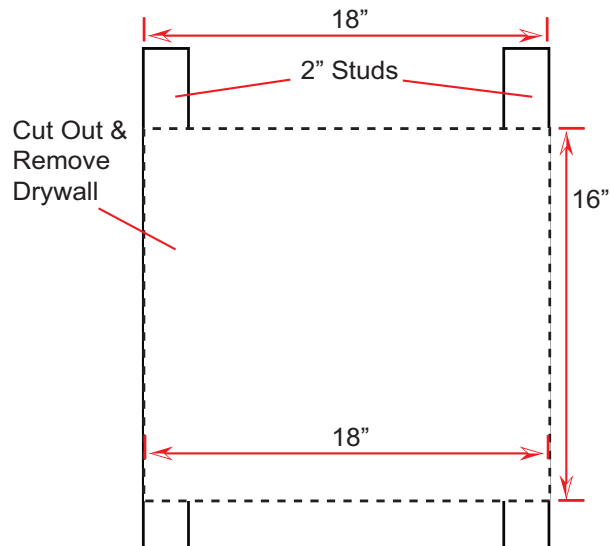


Figure 3. Preparing Mounting Surface for Plywood Wall Mounting

- c. Securely attach the plywood to the mounting surface, ensuring that the plywood is attached to at least two wall studs.
 - d. As necessary, refinish the plywood with plaster, and when dry, paint the finished surface.
3. Tape the wall mounting template ([Figure 4](#)) against the mounting surface location (either the plywood or a wall stud) at a height that complies with local requirements. Each hole for a screw is marked with a crosshair. Mark the center of each crosshair as directed in the following instructions.

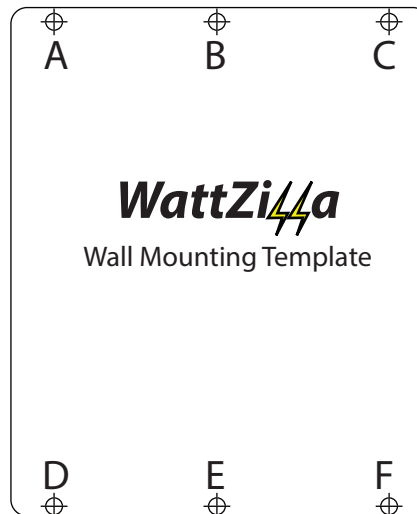


Figure 4. WattZilla Wall Mounting Template

4. In each location where there is a crosshair, mark the hole onto the wall mounting surface ([Figure 4](#)). When mounting to the plywood, ensure that mark holes A, B and C are level. For single stud wall mounting, only mark the crosshairs for holes B and E and ensure that those holes are level.

5. Remove the mounting template.
6. Proceed to either step 7 (plywood wall mounting) or step 8 (single stud wall mounting).
7. For plywood wall mounting, use a wrench to install a hex lag screw into the four corner holes (holes A, C, D and F), leaving 1/8 in. of each screw exposed ([Figure 5](#)). (The enclosure will hang on the exposed ends of each screw.) Then lift and place the enclosure over the exposed screws and against the plywood surface, aligning exposed bolts A, C, D and F with the bottom of the figure-eight-shaped enclosure holes in the enclosure. Tighten the screws as necessary to secure the installation. Then, install two screws into holes B and E in the enclosure. Finally, hand tighten each screw until the enclosure installation is securely attached. Proceed to the wiring instructions, [“WattZilla Electrical Wiring Instructions”](#) (page 12).

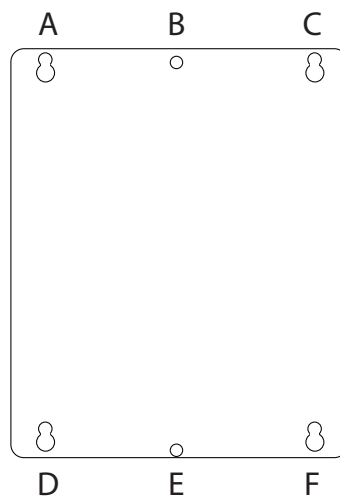


Figure 5. Enclosure Mounting Holes

8. (Note: Two people are necessary to perform this step.) For single stud wall mounting, lift and align holes B and E of the enclosure over the crosshair marks ([Figure 4](#)). While one person holds the enclosure, the other person should use a wrench to install a screw into holes B and E. Hand tighten each screw until the enclosure installation is securely attached. Proceed to the wiring instructions, [“WattZilla Electrical Wiring Instructions”](#) (page 12).

Enclosure Pole Mounting Instructions

The procedure in this section describes how to mount either the WattZilla DUO or WattZilla UNO enclosure to a WattZilla Pole Mounting Kit. The pole is installed into a concrete base out of which comes enclosure wiring and a conduit (optional). The WattZilla Pole Mounting Kit is available directly from LiquidSky Technologies, Inc. For simplicity, the illustrations show the WattZilla DUO only and the standard red pole (an optional stainless pole is also available) ([Figure 6](#)). This procedure also describes the installation of the cable management assembly and snow shield options. The cable management assembly is visible in [Figure 6](#).

Ensure that the enclosure is mounted in accordance with your local requirements. Consult with your local building inspector for more information.

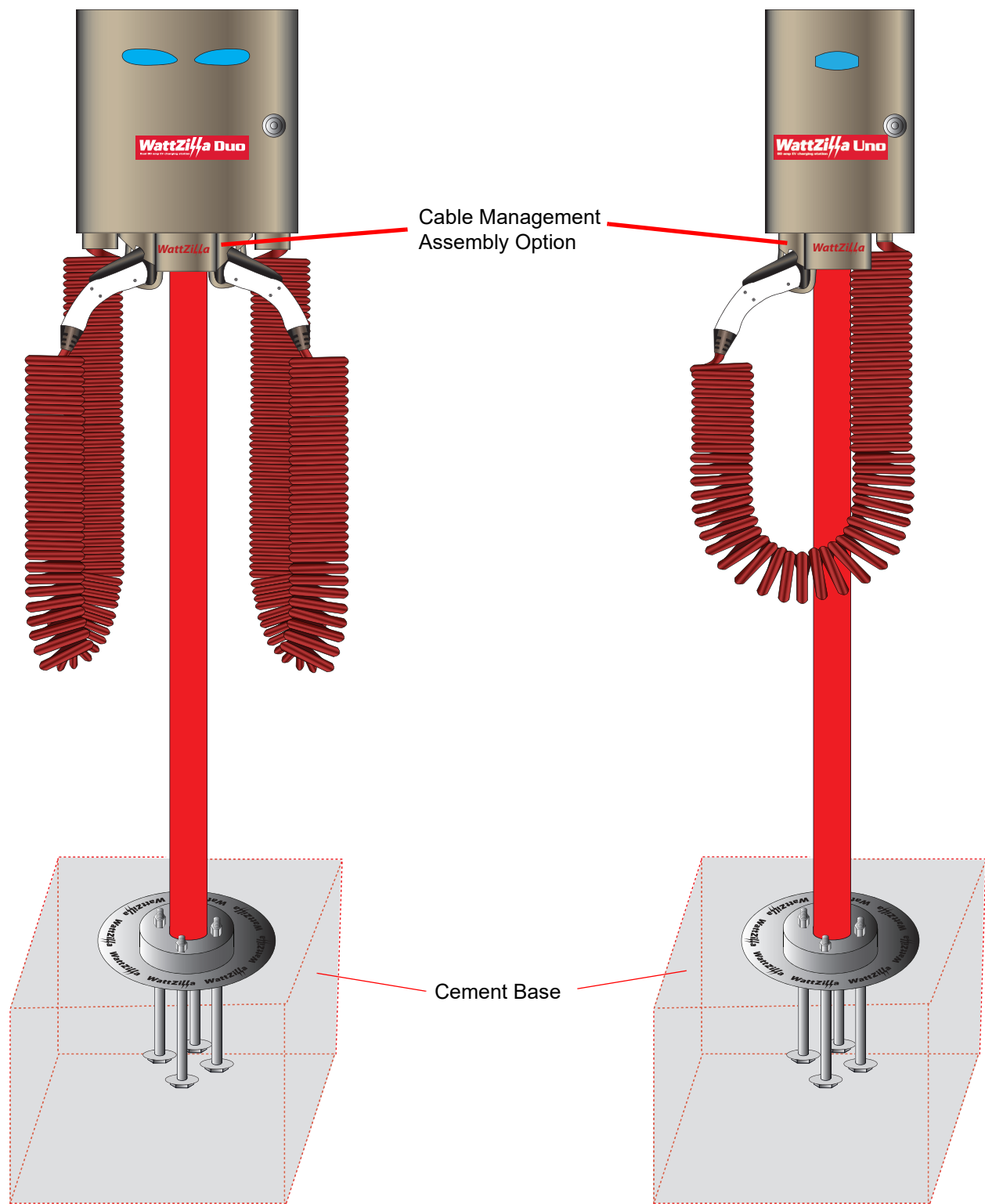


Figure 6. Pole-Mounted WattZilla (DUO at Left, UNO at Right)

PREREQUISITES:

- (4) stainless, corrosion-proof, hex anchor bolt (3/4 in.-10 x 7 in.)
 - (1) stainless, corrosion-proof, bolt positioning plate
 - (1) stainless, corrosion-proof, pole base mounting flange
 - (4) stainless, corrosion-proof, 3/4 in. hex nut
 - (4) stainless, corrosion-proof, 3/4 in. washer
 - (1) red, powder-coated 50 in. pole (or one optional stainless pole) with Myers™ Hub
 - (1 tube) room temperature vulcanization (RTV) gasket gel
 - Conduit (2 in.) (e.g., Liquitite or as code requires) (customer-supplied)
 - Adequate amount concrete (or as required by code) to fill a hole at least 12 in. H x 12 in. W x 12 in. D (customer-supplied)
 - Screwdriver (customer-supplied)
1. Dig a hole a minimum of 12 in. H x 12 in. W x 12 in. D in which to pour a concrete foundation for the pole. Optionally, prepare a concrete form in the hole to contain and form the concrete. Insert the conduit into the center of the hole and route five feet of the necessary electrical wires through it ([Figure 7](#)). For more information about wiring, please see [“WattZilla Electrical Wiring Instructions” \(page 12\)](#).

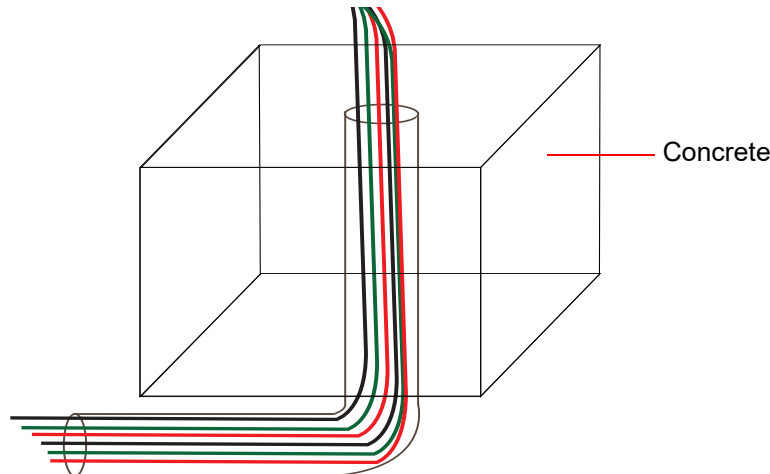


Figure 7. Concrete Base with Conduit and Wiring

2. Insert a washer onto each of the hex anchor bolts ([Figure 8](#)).

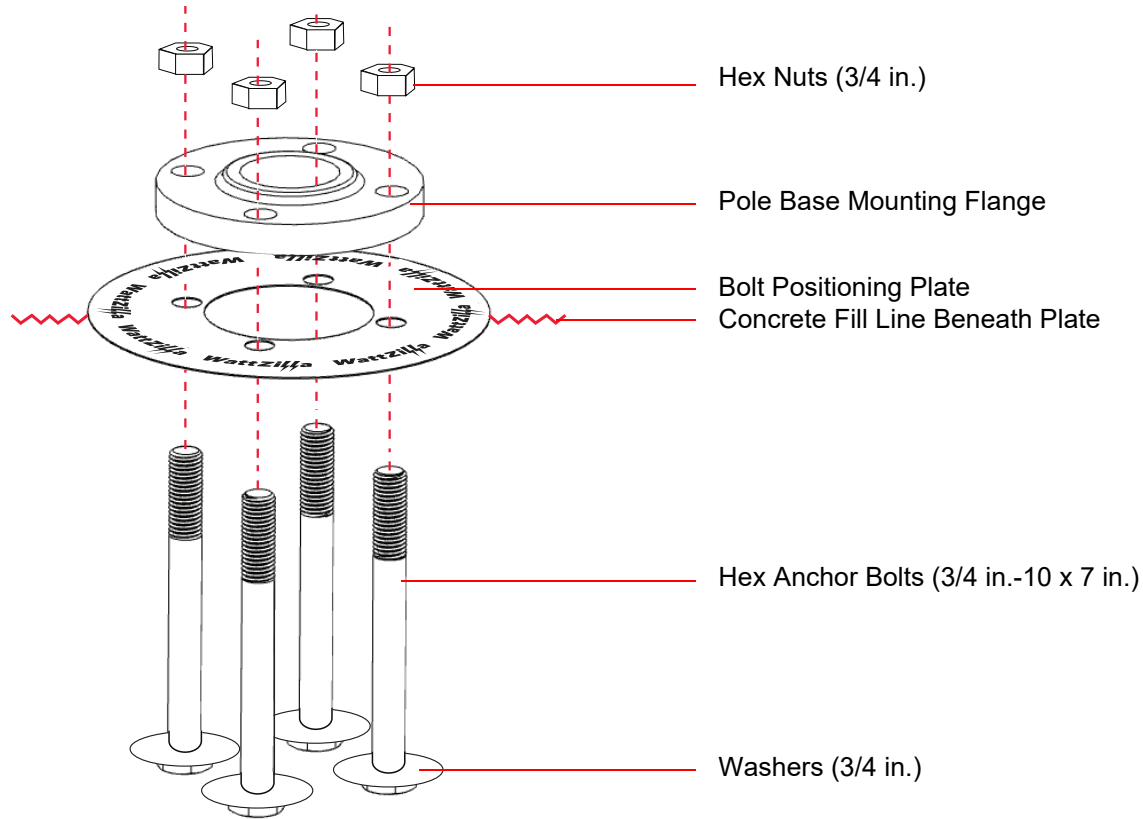


Figure 8. Pole Base Subassembly

3. Insert and screw the hex anchor bolts (with the attached washers) to the bottom of the bolt positioning plate, leaving 1.5 inches of thread above the plate ([Figure 9](#)). (The name *WattZilla* appears on the top of the pole positioning plate, and the threaded ends of the hex anchor bolts are located above the top of the plate.)
4. Route the wiring through a conduit and up through the center of the bolt positioning plate ([Figure 9](#)). Starting from the top of the bolt positioning plate, five feet of electrical wiring should be available for wiring to the WattZilla enclosure.

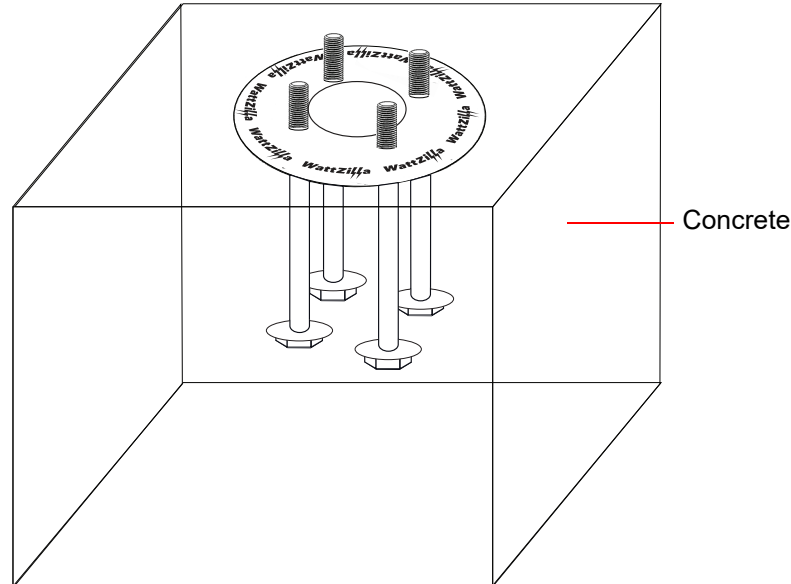


Figure 9. Pole Base Subassembly in Concrete Base (Conduit and Electrical Wires Removed from Illustration for Clarity)

5. Pour an adequate amount of concrete to fill the hole or use the amount required by local codes, routing the concrete around the conduit ([Figure 9](#)). Avoid getting any concrete inside the conduit.
6. Immerse the bolts into the center of the concrete with the top side of the bolt positioning plate facing up, ensuring that the bolt positioning plate is located on the top surface of the concrete ([Figure 9](#)). Ensure that no concrete covers the bolt positioning plate and that the plate is level. The washers should be located on top of the bolt heads as shown.
7. Allow enough time for the concrete to harden.
8. Slide the pole base mounting flange over the bolt positioning plate (reference [Figure 8](#)).
9. Using a wrench, attach and adequately tighten and torque a hex nut onto each of the threaded ends of the hex anchor bolts extending out of the flange (reference [Figure 8](#)).
10. Snake five feet of wiring through the bottom end of the pole, exposing about 1 foot or more of wiring through the top of the pole.
11. Place the threaded end of the pole (bottom of the pole) into the flange that is located at the top of the base subassembly that is embedded in concrete ([Figure 10](#)). Then wrap a piece of protective cloth or tape around the nut on the Myers hub (located at the top of the pole), and place the open end of a wrench over the covered nut. Carefully turn the nut clockwise to securely attach the pole to the flange. Be careful not to strip the threads when attaching the pole to the flange.

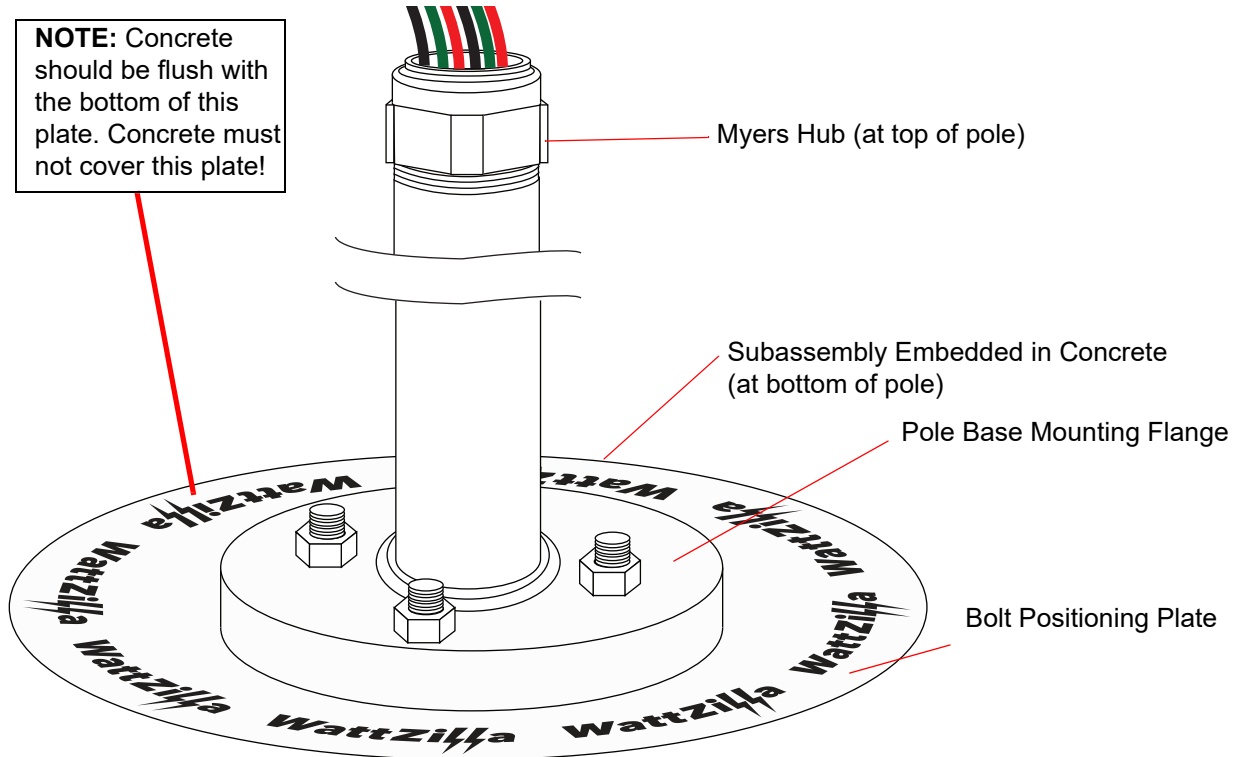


Figure 10. Attaching the Pole to the Base Subassembly

12. (Optional) Slide the cable management assembly over the pipe and rest it on top of the Myers hub ([Figure 11](#)).

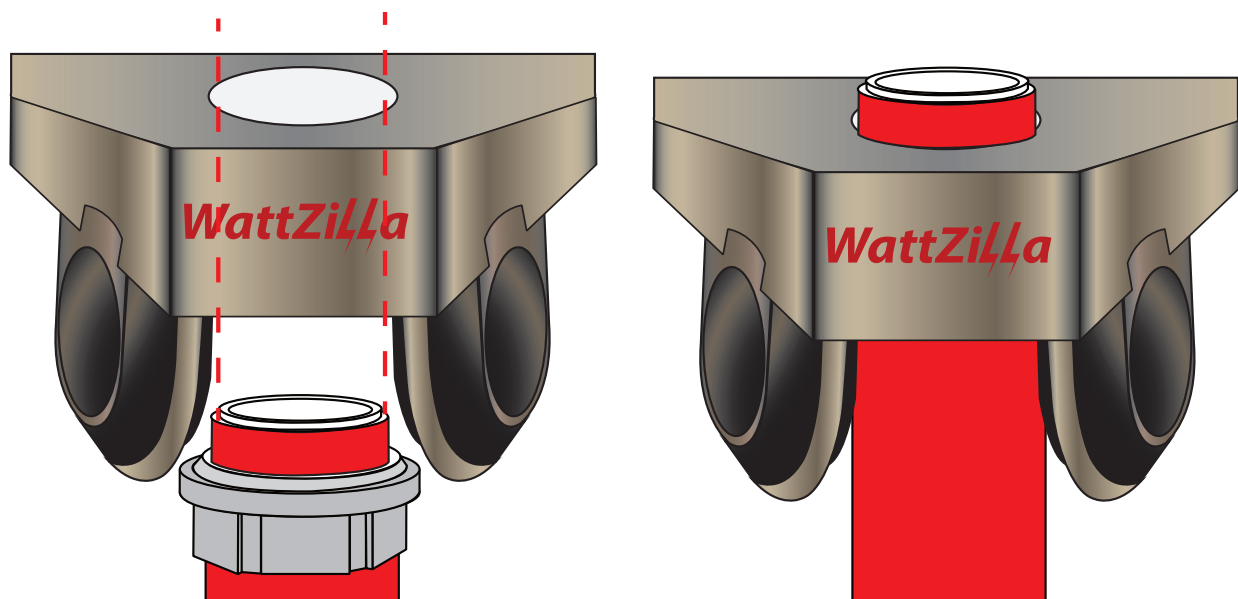


Figure 11. Attaching the DUO Cable Management Assembly Onto the Pole

13. (Optional) In a similar manner, slide the snow shield assembly over the pipe and rest it on top of the cable management assembly or hub (not shown).
14. Optionally, apply RTV gel to the blue gasket on the top of the Myers hub.
15. Lower the WattZilla enclosure onto the top of the Myers hub ([Figure 12](#)).

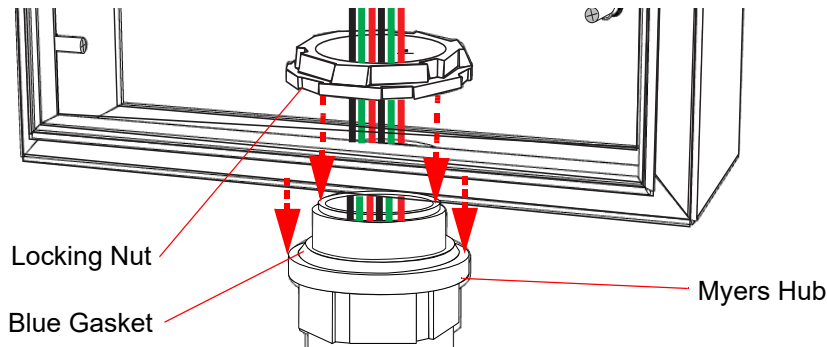


Figure 12. Attaching the WattZilla Enclosure Onto the Pole

16. While one person holds the enclosure, inside the WattZilla enclosure the other person should insert, tighten and torque the locking nut onto the top of the Myers hub to securely attach the enclosure to the pole.
17. Once mounted, maintain water tightness of the enclosure by applying RTV silicone on and around each mounting screw.
18. Proceed to ["WattZilla Electrical Wiring Instructions" \(page 12\)](#).

WattZilla Electrical Wiring Instructions

WattZilla can be installed by any competent electrician using the following straightforward instructions. Either mount the WattZilla enclosure on a pole (using the optional pole mounting kit) or on a level plywood surface as described previously.



Warning: Use COPPER wire only for wiring this device! Do not use aluminum wire! IF WIRING OF THIS DEVICE IS DONE WITH ANY MATERIAL OTHER THAN COPPER, THE WARRANTY IS VOID!
DO NOT USE ALUMINUM WIRE!
DO NOT USE ALUMINUM WIRE!
DO NOT USE ALUMINUM WIRE!



Warning: Do not modify WattZilla by drilling holes in it or changing any wiring or disassembling it in any way! Do not break the seals! Performing any of these actions will VOID the warranty!!

To Wire WattZilla:

1. Insert a hex wrench into the door latch and turning the tool counter clockwise until it stops at the open position ([Figure 13](#)). Open the WattZilla enclosure door.

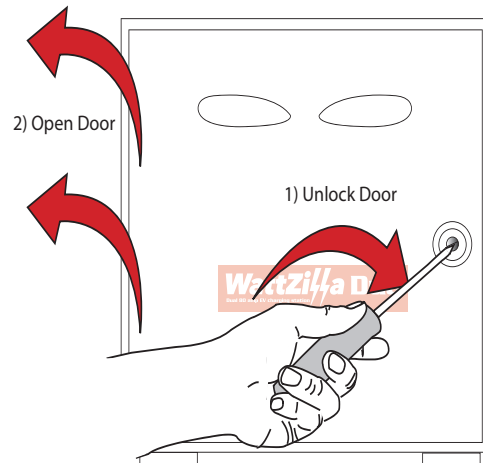


Figure 13. Opening the WattZilla Enclosure

2. After the unit is mounted, connect two unpowered AC power cables (one power cable for each side of WattZilla) through the two-inch metal liquid tight connector located at the bottom of the WattZilla enclosure. For each side of WattZilla, two hot lead number 4 or 6 copper wires and a number 6 copper ground wire are required. Please consult local codes to determine the applicable hot lead wire type to use in your area.
3. (In this step, if your unit is equipped with Curtis Albright electrical contactors, refer to [Figure 14](#). If your unit is equipped with GE electrical contactors, refer to [Figure 15](#).) Connect the two hot leads from a 100 Amp breakered circuit to L1 and L2 on the left contactor. Then do the same with a second 100 Amp breakered circuit to L1 and L2 on the right contactor. To attach the power wire to L1 and L2, insert the wire from beneath the contactor as shown in [Figure 14](#) and [Figure 15](#). Then use a hex wrench

to torque each nut to secure the wire in place.

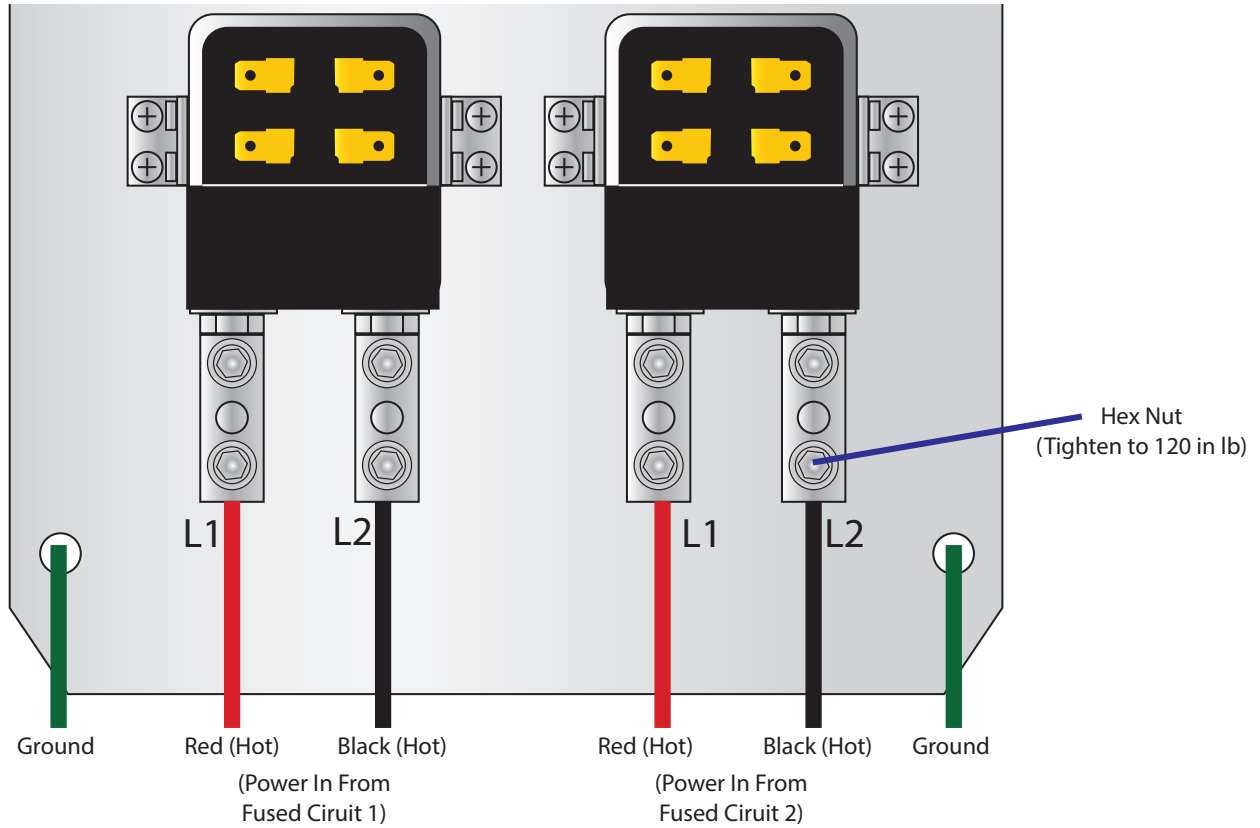


Figure 14. Wiring WattZilla Equipped with Curtis Albright Contactors

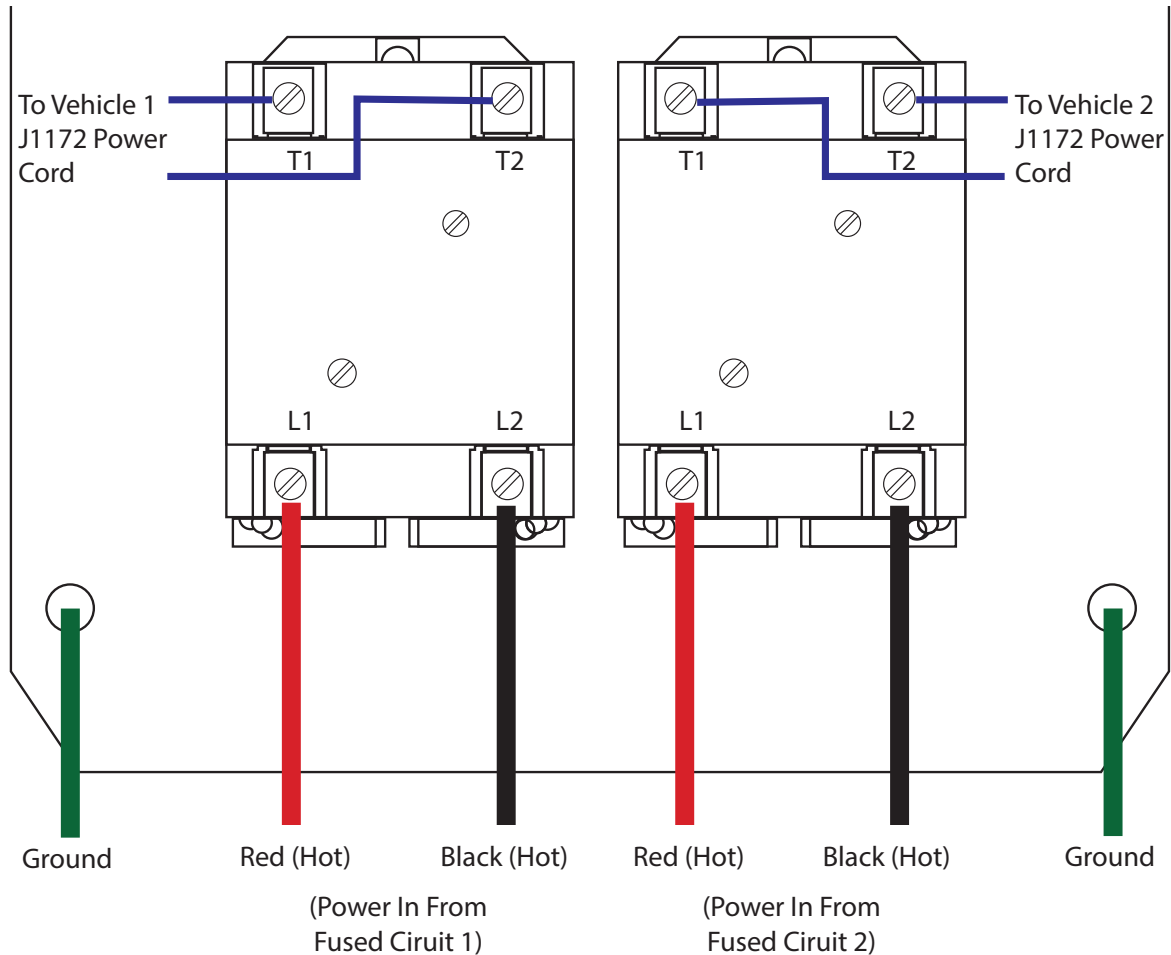


Figure 15. Wiring WattZilla Equipped with GE Contactors (Alternate)

4. Connect the ground wires to the grounding studs located behind the electrical contactors (see [Figure 15](#)). The bolts connecting the WattZilla enclosure to studs are the grounding studs.
5. After completing the internal power hook-up, close the WattZilla enclosure door and lock it by inserting the wrench into the door latch and turning it counterclockwise until it stops at the closed position. Ensure that the enclosure door is secure.
6. Apply power to the electrical wires.
7. Upon application of power, “ready” should appear on each LCD display.

Operating WattZilla

The following procedure explains how to use WattZilla to charge an EV.



Warning: Before connecting WattZilla to a vehicle, ensure that the vehicle is J1772 compatible, or the vehicle is supplied with an adapter (such as those provided by Tesla) to allow the unit to charge the vehicle.



Note: For information on codes or other information displayed on the LCD, please reference [“Interpreting LCD Codes” \(page 16\)](#) and [“Troubleshooting Error Codes” \(page 17\)](#).

To Charge a Vehicle Using WattZilla:

1. Plug the coupler into the vehicle’s charging port. An audible bang indicates that the GFI circuit test is completed and WattZilla has uncoupled the electrical connector to allow for charging.
2. The WattZilla LCD should display **charging**.



Warning: If there is a fault, the display will turn red and display the fault. Remove the coupler and correct the fault before reinserting the coupler.

3. To determine charging duration, please follow the charging times recommended by the manufacturer of your vehicle.

Interpreting LCD Codes

Please refer to the [Table 1](#) for interpreting the LCD information displayed on the WattZilla LCD. For an understanding of error codes, please see the next section, [“Troubleshooting Error Codes” \(page 17\)](#).”

Table 1. LCD Codes and Meanings

LCD Display (Position)	Meaning
Ready (top line, left side)	WattZilla is ready.
Charging (top line, left side)	WattZilla is ready to charge or is charging.
Error (top line, left side)	WattZilla has detected an error.
Stopped (top line, left side)	WattZilla has been stopped.
Waiting (top line, left side)	WattZilla is waiting for a timer.
Sleeping (top line, left side)	WattZilla is sleeping.

Table 1. LCD Codes and Meanings (continued)

LCD Display (Position)	Meaning
L2:80A (top line, right side)	The meaning of these two default fields are defined here: <ul style="list-style-type: none"> L2 — when in Ready state, this field indicates that there is 240V input voltage. 80A — specifies the maximum allowed current by WattZilla (e.g., 80A). Note: This information is displayed only when the state on the top line, left side of the LCD is Ready, Charging, Error, Stopped, Waiting or Sleeping .
EV State and Current Charging Session (bottom line)	Specifies one of the states of the EV and the current charging session: <ul style="list-style-type: none"> EV Not Connected — the EV is not connected to WattZilla. EV Connected — the EV is connected to WattZilla. Note: This information is displayed only when the state on the top line, left side of the LCD is Ready, Charging, Error, Stopped, Waiting or Sleeping .
Elapsed Time (bottom line, left side)	When WattZilla is in the Charging state, the elapsed time since starting the charging session is displayed in the format hh:mm:ss (where hh is hours, mm is minutes and ss is seconds) (e.g., 00:03:08).

Troubleshooting Error Codes

Reference [Table 2](#) for a list and description of LCD error codes and corrective actions.

Table 2. Troubleshooting LCD Error Codes

LCD Error Code	Meaning	Corrective Action(s)
Errors During Power On Self Test		
Earth Ground Test Failed	WattZilla could not detect a ground connection.	Check ground connections and AC_Test lines.
GFCI Self Test Failed	WattZilla did not detect a ground fault circuit interrupt (GFCI) fault during test.	Check GFCI CT and self test coil.
Stuck Relay Test Failed	WattZilla read AC voltage before relays were closed.	Check relay and AC_Test lines.
Operating-Time Errors		
GFCI Fault	WattZilla detected a ground leakage of > 20ma.	WattZilla will retry charging after 15 minutes up to 4 times.
No Diode	WattZilla did not detect the J1772 vehicle diode.	N/A
No Ground	WattZilla lost connection to ground.	Check grounds and AC_Test lines.

Safety Features

WattZilla supports all the safety features required (and a few more) by standards documents for EV charging from standard SAE J1772, NEC and UL, including:

- ◆ UL2251 Standard for Plugs, Receptacles and Couplers for Electric Vehicles
- ◆ UL2231 Standard for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits

- ◆ SAE J1772™ Electric Vehicle Conductive Charge Coupler Standard
- ◆ NEC Article 625 Electric Vehicle Charging System Equipment

Power Interlock

WattZilla includes an interlock that de-energizes the EV connector and cable whenever the electrical connector is uncoupled from the EV (NEC 625.18).

Pilot Signal

WattZilla supports the SAE J1772 pilot signal that automatically de-energizes the cable conductors and EV connector upon exposure to strain that could result in either cable rupture or separation of the cable from the electric connector and exposure of live parts (NEC 625.19) (SAE J1772).

Self-Test

WattZilla performs a self-test during start up to ensure the unit is working properly and safely. Upon power-up and/or at the time of charging, WattZilla performs some or all (depending on state) of these self-test checks:

- ◆ GFCI fault detection checks for missing ground by responding to a 20mA ground fault condition
- ◆ Test for missing ground
- ◆ Test of the welded relay contact monitor circuit
- ◆ Other tests

Ground Monitoring

WattZilla checks ground upon power-up and constantly monitors for the presence of a proper safety ground. (SAE J1772)

Ground Fault Interrupt

WattZilla includes mandatory ground fault interruption with a 20ma trip in all models available for protection against electric shock of personnel. (NEC 625.22) (SAE J1772) (UL 2231)

After each GFCI event, WattZilla will retry charging up to 4 times after a 15-second delay per event. (UL 2231)

Stuck Relay Detection

WattZilla checks relay contacts every time it starts to charge to ensure relays are functioning properly and providing proper power interlock.

EV Identification

WattZilla verifies the pilot signal integrity by checking the EV diode. The pilot signal must be at BOTH the correct resistance AND pass the “diode check” to activate the circuit. (SAE J1772)



Note: This safety feature is commonly left out of many other commercial charging stations.

Ventilation Required

WattZilla checks for the EV ventilation required request. WattZilla will deny charging if ventilation is not available or allow charging if the charging station is equipped to activate ventilation. (SAE J1772)



Note: This safety feature is commonly left out of many other commercial charging stations or implemented with a warning label only.

Warnings and Notes

Please heed these warnings and notes.



Warning: Adult supervision is required when building, operating, servicing or inspecting.



Warning: Installation of an EV charging station requires wiring Alternating Current (AC) components that will be exposed to voltages from 100 to 250v. If you do not have the experience and knowledge required to safely work with AC voltages please consult with an experienced electrician for assistance and inspection of your work.



Warning: Do not install WattZilla near flammable, explosive, or combustible materials. Do not locate or store flammable, explosive, or combustible materials near the charging station.



Warning: Do not operate the WattZilla with a visibly damaged cable or if the enclosure or connector is broken, open, cracked, or shows any other signs of damage.



Note: Regularly inspect your WattZilla. Pay special attention to excess heat.



Note: Important always disconnect your charging station from power before performing an inspection and/or maintenance.

About LiquidSky Technologies

LiquidSky Technologies, Inc. is a high technology company engaged in the design of state of the art products in the power industry.

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