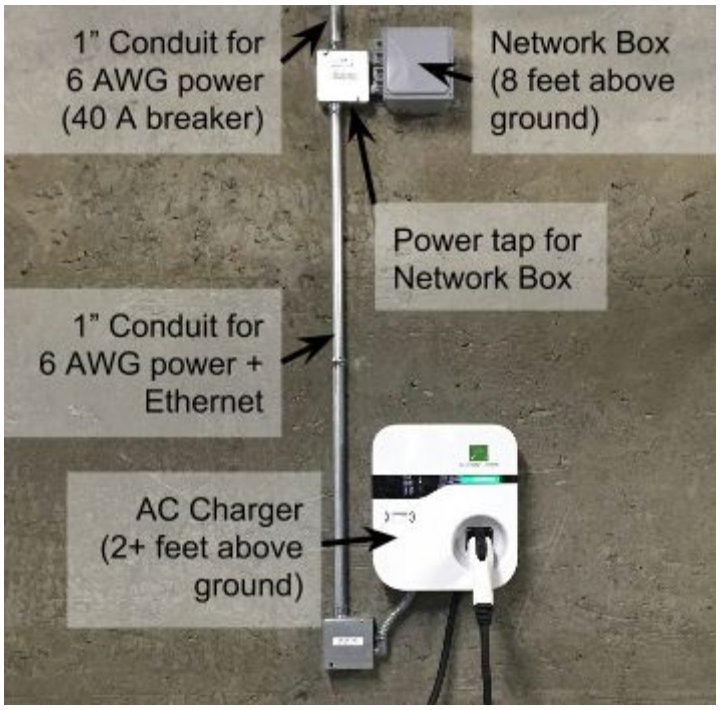
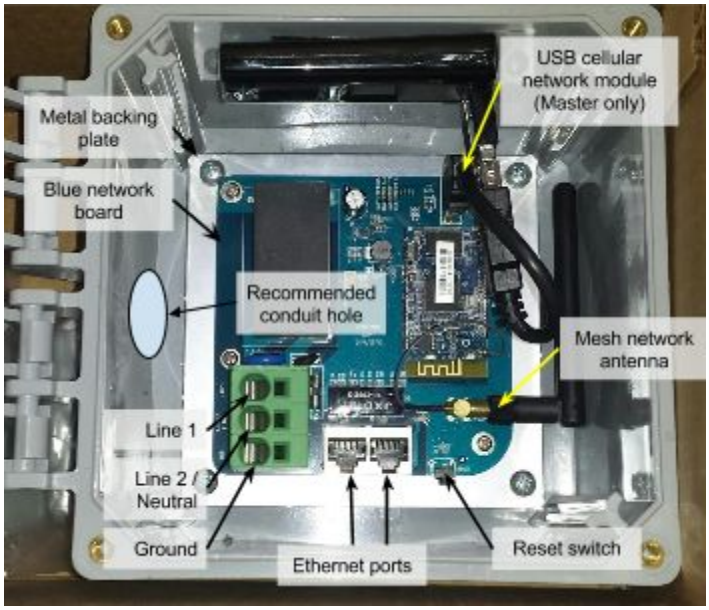
Single-page install preview

This six-page document specifically intended for installers on the day of installation is designed to serve as an overview of the full EverCharge system installation, configuration, and testing specifications. **Please read this document in full, as requirements were updated July 2015.**

The full sixteen-page design and installation document is also included in the shipping box, and covers topics such as site planning, power requirements, troubleshooting instructions, and so forth. Contact EverCharge at install@EverCharge.net or 888.342.7383 if you have any questions, comments, concerns, or need clarification.



Example installation image



Inside the Network Box

AC Charger requirements

- 208-240V @ 40 amps (110-120V NOT OK)
- 6 AWG copper conductor/ground
- Individual 40A breaker for each AC Charger
- 1" trade size conduit
- Mount at least 18 inches (450 mm) above floor inside, 24 inches (600 mm) outdoors
- Shielded Ethernet connection to Network Box
- Charge cable (18 feet / 5.5 m) reaches vehicle plug and does not block walkway

Network Box requirements

- Verizon cellular signal required for Master only
- Mount roughly 8 feet (2.5 m) above floor, away from other conduit/pipe
- All wiring must be far from antennas
- Line-of-sight necessary for multiple boxes
- Boxes mounted either vertically one level apart or horizontally < 200 feet (60 m) apart (but not both)
- All antennas must be same orientation (vertical)
- Any always-on power OK (110-240V)

Shopping list / required tools

- ▢ 1-¼" fitting for AC charger knockout
- ▢ 1" trade size conduit (distinctive color?)
- ▢ 6 AWG copper conductors
- ▢ Torx T30 and T20 bits
- ▢ Junction boxes
- ▢ Mounting screws/bolts for Network Box
- ▢ Insulated Ethernet cable (rated for 300V)
- ▢ Laptop with an Ethernet port

1. Installing the EverCharge AC Charger

1.1. Before installing

1.1.1. Choose an appropriate mounting location

The EverCharge AC Charger should be mounted on a wall or column adjacent to the electric vehicle parking space. Make sure that:

- ➔ The distance to the vehicle charge port is not longer than the charge cord length of 18 feet (5.5 meters)
- ➔ The charge cord will not obstruct a walkway
- ➔ The AC Charger is in a location protected from a vehicle collision
- ➔ The AC Charger MUST be positioned such that the charging cord receptacle is at least 18-24 inches (450-600 mm) above the ground [NEC 625.50]

1.1.2. Power and grounding requirements

The AC charger requires 208-240V across two legs. The AC Charger must be connected to a grounded, metal, permanent wiring system via the equipment grounding terminal on the charger.

1.1.3. Mounting and installation parts

EverCharge recommends the following parts for an AC Charger installation:

EverCharge-supplied components:

- Mounting bracket
- Torx T30 bolts (x3) for securing the AC charger to the mounting bracket
- Cable hanger bracket (optional)
- Torx T20 ¼" expansion bolts (x2) for concrete mounting
- No. 8 wood screws (x2) for wood mounting

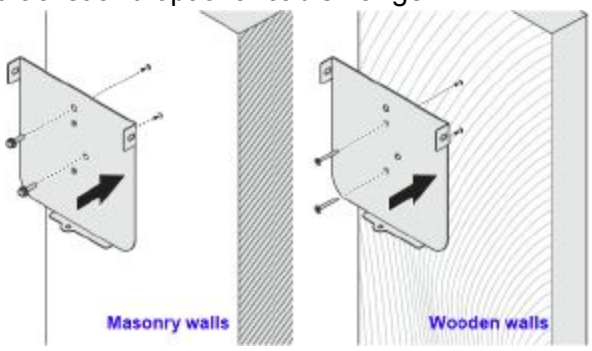
Installer-supplied components:

- Conduit of trade size 1" (27mm)
- 1-¼" fitting for conduit knockout on AC Charger
- Enough junction boxes to comply with the Expandability Best Practices
- Copper No. 6 AWG 75°C circuit conductors
- 40 amp circuit breaker
- Insulated Ethernet cable rated for 300V at 200°C for Network Box connection

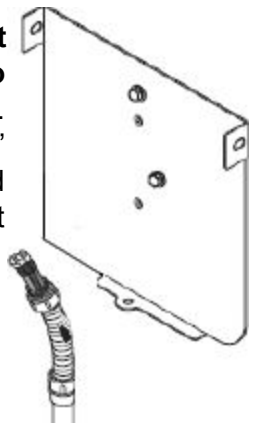
1.2. Step-by-Step AC Charger installation instructions

Disconnect electrical power prior to installing the AC Charger. Failure to do so may cause physical injury or damage to the electrical system and charging unit.

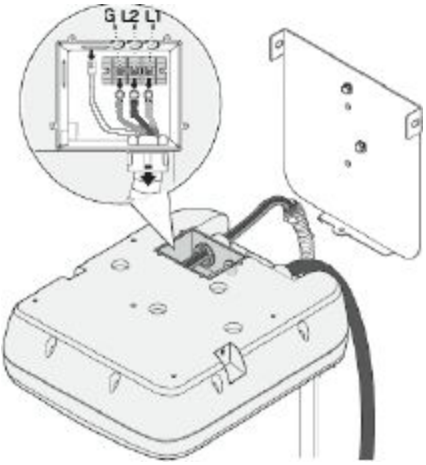
1. **Drill bolt holes** in the wall for the mounting bracket and optional cable hanger.



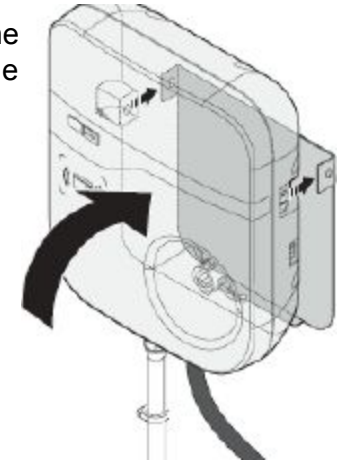
2. **Secure mounting bracket and optional cable hanger to wall** using appropriate bolts. For masonry, use ¼" expansion bolts. For wood studs, use #8 wood screws at least 2 inches in length.



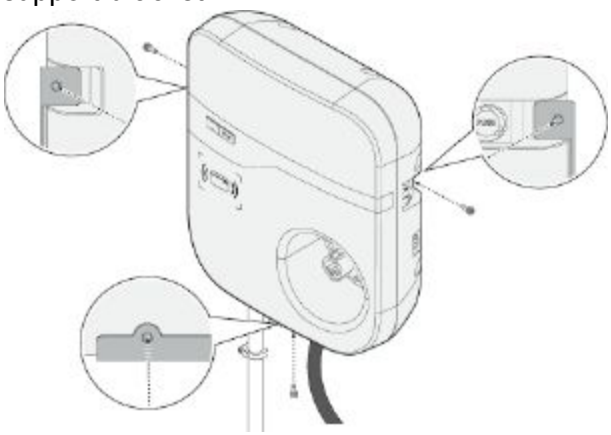
3. **Connect wiring to charger** in accordance with local codes. Use No. 6 AWG 75°C copper conductors and shielded Ethernet cable rated for 300 V and 200°C. The charger requires 208-240V.



4. **Align screw holes** of the mounting bracket with the AC Charger holes.



5. **Install and secure** with three screws to the support bracket.



6. **Attach charge cable to plug** and hang the rest of the cable on the cable hanger if installed.

2. Installing the EverCharge Network Box

The Master EverCharge Network Box MUST be installed in a location with Verizon cellular reception. If you believe there is no cellular service of any kind please make that clear when you contact EverCharge with your findings.

2.1. Before installing

2.1.1. Connection requirements

The Network Box must be connected to any always-on 110-240V power source and ground. Each Network Box can control up to two EverCharge AC Chargers via shielded Ethernet cables. Network Boxes do not require a connection to an AC Charger if they are just being used to fill in the wireless mesh network.

2.1.2. Power requirements and wiring in-line with an AC Charger

Each EverCharge Network Box consumes less than 0.1A at 110-240V. The Network Box can be wired on the same 40A breaker with the AC Charger using the tap rule [NEC 240.21(B)(1)], as long as the tap conductor is not over 10 ft (3 m) long and has an ampacity of at least 4 amps. EverCharge considers the tap a field installation and the Network Box is a control device in a different enclosure from the tap location.

2.1.3. Ethernet and high voltage wires in the same conduit

Shielded Ethernet cable and high voltage wire can share the same conduit as long as there are no connections, and the insulation rating of the Ethernet cable exceeds the power level in the conduit. Shielded Ethernet cable with an insulation rating of at least 300V must always be used.

2.1.4. Network Box placement and mounting

⚠ **Metal objects (like conduit or pipe) will block or limit Network Box signal.**

- For required functionality, EverCharge encourages mounting the Network Box approximately 8 feet (2.5 meters) high on a column or wall adjacent to the charger, above the height of vehicles, but not so high that the box is at the same height as other pipes running along the ceiling.
- Whenever multiple Network Boxes are necessary, consult EverCharge for system layout.
- **The objective is to obtain line of sight communication whenever possible** and at the very least have no metal conduit, metal plumbing, or metal structures blocking commutation between Network Boxes.
- Select a mounting location no further than 200 feet (60 meters) horizontally or one level vertically from another Network Box.
- All Network Boxes in the system must be able to communicate with at least one other Network Box in the wireless mesh network. Install as many Network Boxes as needed to complete the network given the “200 feet or one level apart” guideline as a max range for a each box.
- For example: Do not place a Network Box next to the ceiling on a wall then expect the signal to reach up to the next level of the garage and 200 feet horizontally to a second Network Box. Instead, mount one Network Box on the lower level as normal (8 feet up), the second Network Box on the level immediately above (also 8 feet up), and the third 200 feet away on the same level as the second Network Box.

2.1.5. Mounting and installation parts

The following tools are recommended for the EverCharge Network Box installation:

EverCharge-supplied components:

- 4x Mounting Feet and screws
- Enclosure door screws (discard the plastic hole covers)

Installer-supplied components:

- Shielded Ethernet cable cut to length
- Power cable with an ampacity of ≥ 10% of the circuit breaker capacity [NEC 240.21(B)(1)4]
- Mounting screws or bolts appropriate for the mounting surface

2.2 Step-By-Step Network Box installation instructions

⚠ **Do not coil excess wiring of any kind including Ethernet in the Network Box. Keep power wiring as far away as possible from the antenna and cellular module.**

1. **Mount**: Turn the Network Box upside down and fasten the mounting feet with the included screws. Mount the Network Box to the wall using any acceptable fastening technique, keeping in mind the positioning requirements in Section 2.1.4.
2. **Install Conduit**: Unscrew the backing plate from the enclosure and safely store. Drill a conduit hole on the side of the box opposite from the black mesh network antenna (the hole should be on the side with the hinge). Secure the conduit to the box as appropriate. Reattach the metal backing plate before pulling wire.
3. **Connect Power and Ethernet**: Insert a screwdriver into each terminal, then insert the wire and remove the screwdriver to clamp. Connect the shielded Ethernet cable coming from an AC Charger to an open Ethernet port.
4. **Position Antenna**: All mesh network antennas must be oriented the same direction for proper communication. Keep all antennas as close to vertical as possible.

3. System configuration and testing

After physically installing all of the AC Chargers and Network Boxes, before users can charge their cars, the system must be configured so that at no point does the system ever try to draw more power than is safe. The following tools/materials are required for configuration:

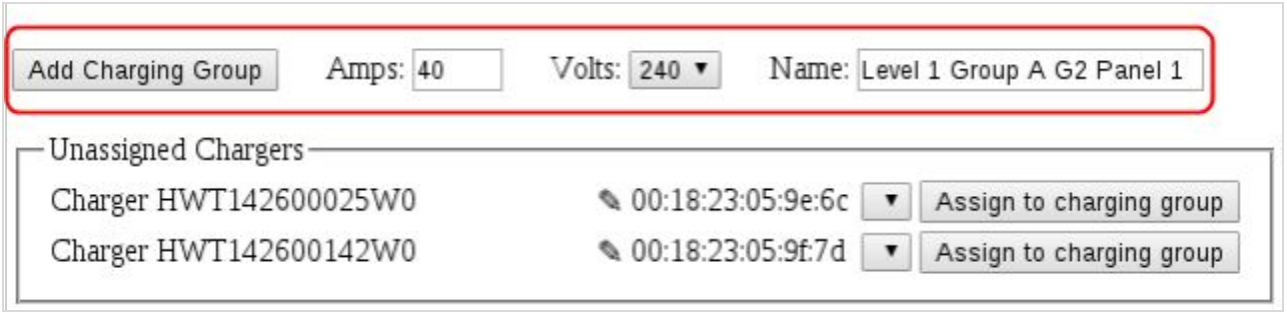
- The serial numbers and locations of all EverCharge AC Chargers
- A laptop computer with an Ethernet port
- The Master Network Box with an open Ethernet port
- Ethernet cable of appropriate length to temporarily connect the laptop to the Master Network Box
- EverCharge Access Cards (2x for each AC Charger)

3.1. Configuration instructions

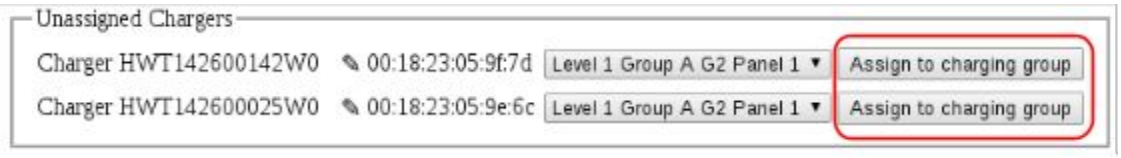
1. **Plug in to Ethernet to configure**
   With all EverCharge hardware powered on, use an Ethernet cable to connect to the Master Network Box and navigate to 192.168.0.1. Enter the password `EverCharge_pass` and click "Log In".
2. **Create Charge Group(s)**
   Enter the desired **Maximum Current Draw** in amps, line Voltage (Volts) and descriptive name for the charge group, including the garage level and panel identifier. For example: "Level 1 Group A G2 Panel 1". Then click "Add Charging Group" to create that Group. Repeat as necessary if multiple Charge Groups need to be created.

The amps value for the Charge Group is the maximum that the system will draw from the breaker or subpanel. This value should never exceed 80% of the available capacity on the subpanel or larger breaker.

Remember that a Charge Group means a group of EverCharge AC Chargers that are sharing the electrical capacity of a single subpanel or larger breaker.



3. **Assign AC Chargers to Charge Groups**
   The AC Chargers that are connected to the wireless mesh network will automatically appear. Select the appropriate Charge Group for each charger, then click "Assign to charging group" to assign each charger to the appropriate group, and click "OK" on the window that pops up.



4. **Assign and test access cards**

Each AC Charger comes with an envelope containing two access cards. To assign the cards to the AC Charger: first tap each card, one at a time, to the image of a card on the front of the charger. The AC Charger should immediately beep twice, followed by another beep (and red LED flash) within 10 seconds.

After both cards have been tapped to the charger, click the small pencil icon next to the AC Charger serial number (highlighted here with a circle around it) to view the cards that have been tapped recently.

A window pops up. Assign cards to the charger. Each card has a unique serial number, and cards can be distinguished with an app on any NFC-equipped smartphone, such as NFC Reader for Android.

After assigning cards, test an assigned card by tapping it to the charger again. It should beep twice, then within 10 seconds, it should beep twice again and the LED should cycle between green/orange for two minutes, indicating the card was authorized and the system is ready to charge.

If the charger takes longer than 10 seconds to respond after tapping a card, it does not have a good connection with the Master Network Box. Make sure all antennas are vertical and there is no conduit/metal pipe near the antenna side of any Network Box.

Multiple users can use the same AC Charger by assigning more cards, but this is not recommended.

3.2. Installation summary checklist

Use the following checklist to make sure that everything has been installed and configured correctly:

- ❑ Transformer, Main Breaker, Panel, subpanel have available capacity
- ❑ Junction Boxes along the entire electrical run for future expandability
- ❑ If applicable, trunk infrastructure wiring sized for the system breaker size
- ❑ AC Chargers are securely and safely mounted on the wall, column, or pedestal adjacent to the electric vehicle parking space
- ❑ AC Chargers are connected to 208V-240V and a 40 amp breaker with No. 6 AWG wire
- ❑ Each AC Charger is connected with shielded Ethernet cable to a Network Box
- ❑ Each Network Box has been supplied with always-on power
- ❑ System has been configured via an Ethernet connection to the Master Network Box
  - ❑ Master Network Box installed in location with best cellular signal
  - ❑ Charge Group(s) created
  - ❑ Each AC Charger assigned to a Charge Group by serial number
  - ❑ Access cards assigned and in envelopes for customers
  - ❑ Access cards tested with assigned chargers
- ❑ Send EverCharge the site configuration including locations of each charger and it's serial number at install@EverCharge.net. Be sure to include photos of the install!