

UP160J Networked EV Charger Unit



IMPORTANT SAFETY WARNINGS

READ FIRST: Important safety information is contained throughout this document. Read this manual in its entirety before attempting any service or installation of the charger.

ELECTRIC SHOCK! This charger may be fed power by more than circuit breaker. There is a potential for lethal electric shock whenever you access the interior of the charger. Before opening the enclosure, ensure all the breakers that feed power to the charger unit are disconnected.

DAMAGE TO ELECTRONICS: A wayward screwdriver in the box could short-out and damage the electronics module. Before opening the enclosure of the charger, ensure that you disconnect BOTH breakers that feed power to the charger unit.

INSTALLER QUALIFICATIONS: ChargeTronix chargers must be installed and serviced by a qualified journeyman or higher electrician in full compliance with all local and regional laws and in accordance with the National Electrical Code NFPA70. This manual and its contents do not, in any way, shape, or form, relieve the installer of responsibility to follow local safety codes and standards.

GROUNDING: This charger must be connected to the service panel ground bar via an equipment-grounding conductor at all time. This equipment-grounding conductor must be run with the circuit conductors and connected to the grounding block in the charger.

INSTALLATION LOCATION: Do not install the charger near flammable, explosive, or otherwise combustible materials, vapors, or objects.

DO NOT MODIFY: This ChargeTronix charger should not be modified in any way, shape, or form. Doing so will void the warranty, compromise protection, and could result in possible electric shock fire hazard, or severe injury.

OPERATING CAUTIONS: Ensure that the charger coupler is in the holster and the charging cord is positioned so that it will not be stepped on, tripped over, or subjected to undue damage or stress. The charger should be supervised by an adult when used around children. Do not put fingers into the charger coupler.

ADVERSE OPERATING CONDITIONS: Do not operate this charger when the charging or cable is loose or visibly damaged. If the charger or charging cable is loose or otherwise damaged, immediately call an authorized representative for service. Do not use the charger in temperature outside of the operating range listed in this manual, -31°F to 131°F (-35°C to 55°C).

REPAIR: Do not attempt to repair or service the charger yourself. If the charger requires servicing, contact your support representative.

NO INFORMATION GUARANTEE: Significant effort has been made to create this manual and to keep the information contained in inside current and applicable to the most common North American installation requirements.

LIMITATION OF LIABILITY: ChargeTronix cannot assume responsibility for installation, personal injury, property damage, incidental, contingent, or consequential damages of any kind resulting from inability to use this manual. ChargeTronix cannot assume responsibility for acts of God, alterations, shipping and handling, or any other factors not under the control of ChargeTronix.

Specifications

AC Power Input	208 to 240 VAC 60Hz, single phase @ 40A x 2
Power Connections	Dual Port Level 2, Level 2: (2) independent 40A
Required Breaker Panel	Two 40A dual-pole breaker (non-GFCI) per port (60A total)
Maximum Output Current	30A continuous per port
Maximum Power Output	7.2kW max for each port, 14.4kW total
Standby Power Consumed	<10W continuous
Connector(s)	SZE J1772TM
Length of Charging Cable	18'
Enclosure Rating	NEMA 3R
Operating Temperature	-30°F to 130°F (-35°C to 55°C)
Operating Humidity	Up to 95% non-condensing
Terminal Block Temperature Rating	212°F (100°C)
Weight	30 lbs.; 73 lbs. on pedestal mount
Dimensions	Pole/Wall Mount: 54" H x 7" W. Pedestal Mount: 70" H x 7" W
Base Pad Size	12" x 12" x 12" (pedestal mount only)
Network Connectivity	LAN: hard-wired Cat5 for master/slave chargers. WAN: cellular network for the master charger
Data Inputs/Outputs	RJ45 (Cat5 ethernet cable connects gateway charger to non-gateway charger)
RFID Reader	Active multi-standard
Display	3.5" back-lit LCD monochrome. Non-reflective, heat-resistant UV coating. Auto-ambient light sensor.
Wiring	Two 208-240 VAC and shared Earth/Ground. Total of five wires
Onboard Controls	Back-lit soft-touch numeric keyboard
Wireless Modem	3G/4G/Wi-Fi
Housing Construction	¼" aluminum
Base Pad Construction	½" aluminum
End Cap Construction	Aluminum
Head Unit	Polycarbonate plastic
Housing Color	Gray
Power Metering Accuracy	1% +/- accuracy
Power Reports/Store Interval	15-minute, aligned to hour
Grid Health Protection	Line voltage and frequency detection logging
Surge Protection	6kV@3000A (additional protection at panel advised)
Plug-Out Protection	Power cut-off per SAE J1172TM specifications
Ground Fault Protection	20mA CCID20 with three auto-retry
Open Safety Ground Protection	Monitors safety (green wire) ground connection
Safety Certification	ETL Listed. Complies with: UL2231-1, UL2231-2, UL2594, UL991; NEC Article 625 for J1172
Environmental Data	Housing: RoHS compliant major components

Installation Requirements for the ChargeTronix Model UP160J Dual Port AC Charger

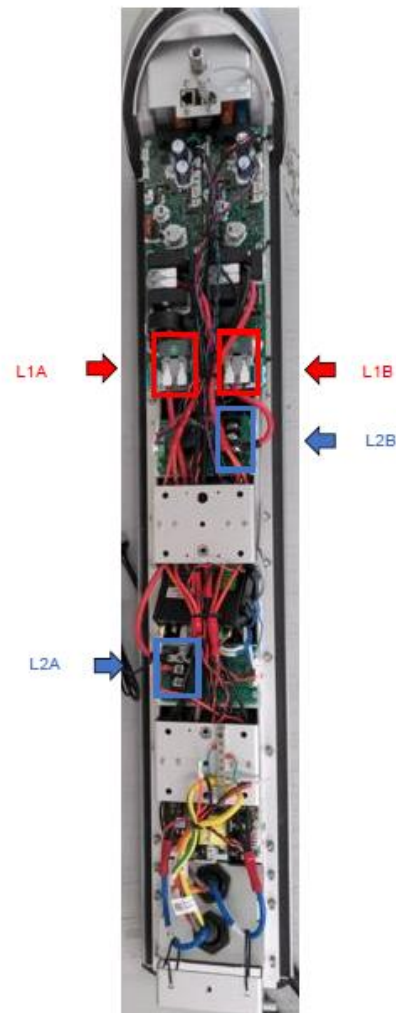
Electrical

Each UP160J EV charger offers two Level 2 standard outputs, therefore requiring two dedicated 208-240 VAC circuits and an earth/ground wire for a total of five wires running to the charger.

- **Input/Output Voltage:** 208 to 240VAC
 - **Input Service Breakers:** Two (2) dedicated 40-amp double pole breaker (**non-GFCI**)
 - L1A & L2A for Connector — A
 - L1B & L2B for Connector — B
 - **Lugs:** 2 x 8-AWG terminal
 - **Max output current of each port:** 30 Amp
 - **Standby power consumed:** <10 Watts continuous
 - **Total maximum output power from charger:** 14.4kW
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- **LAN:** Hard-wired RJ45 for gateway
 - **Wireless Modem:** 3G/4G/Wi-Fi Modem

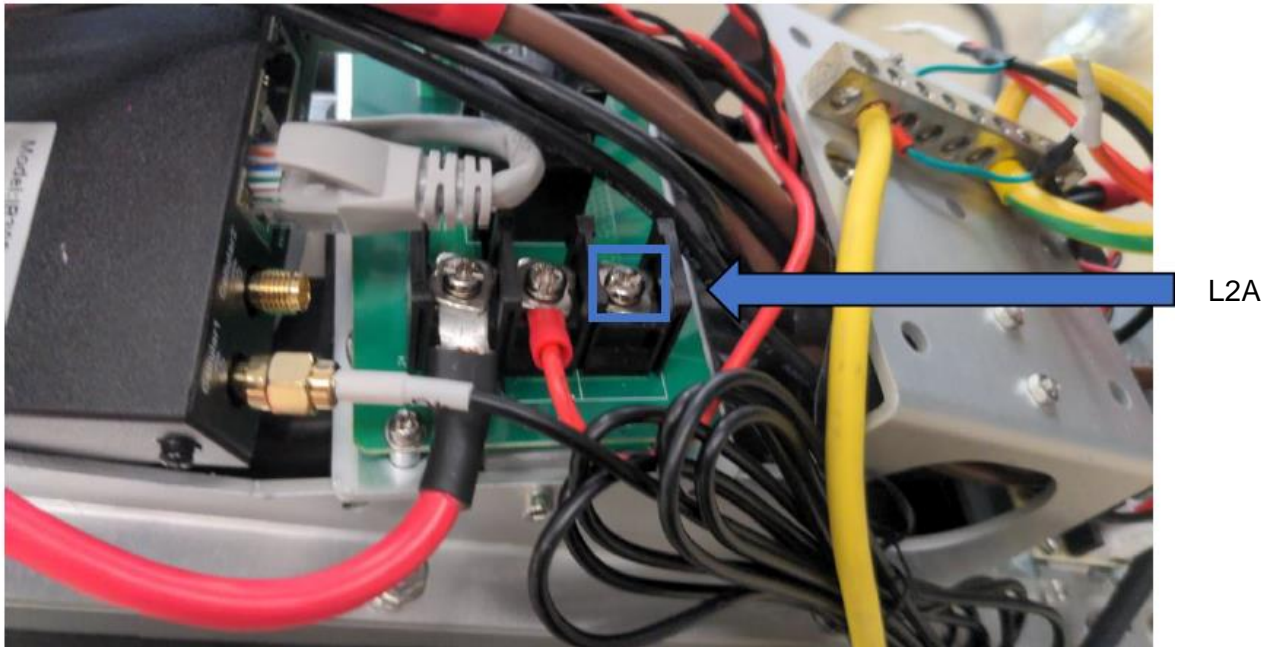


8-AWG terminal

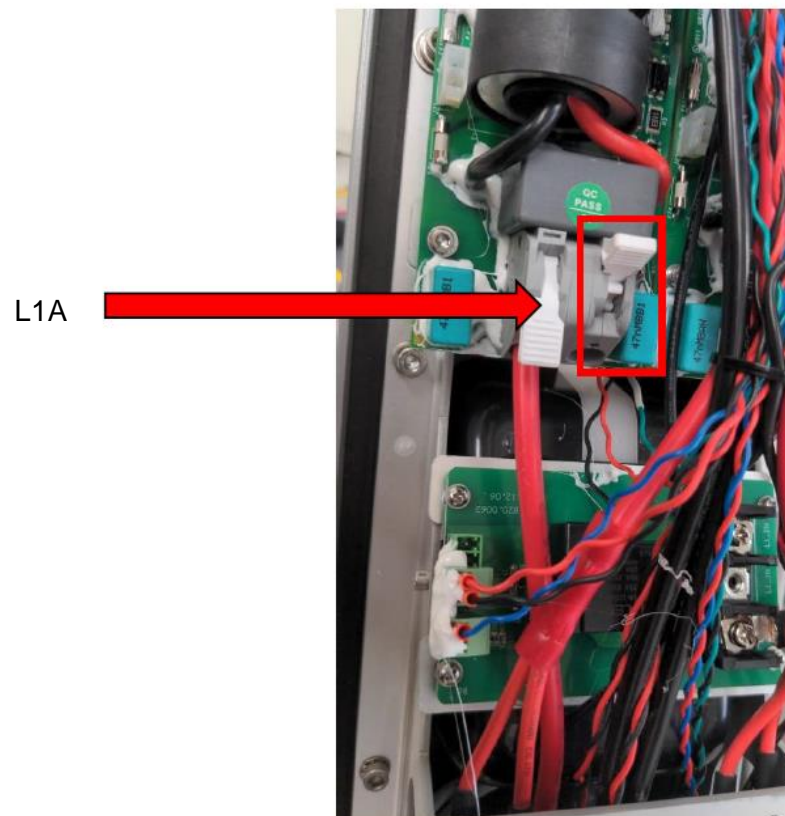


Left Side

Connect power to the lug on the spot indicated on L2A, seen in the image below:

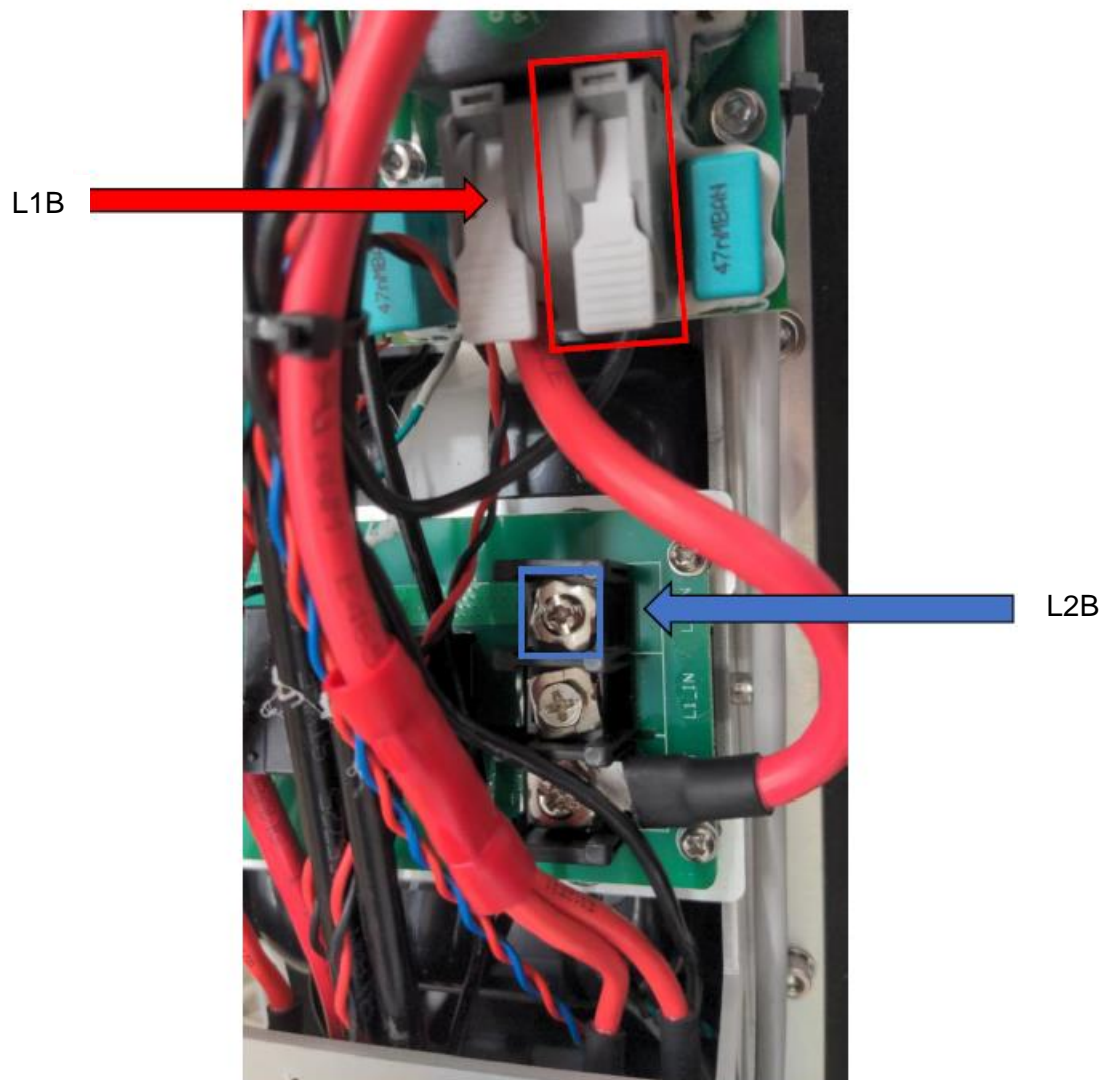


Connector A must attach the lug L1A to the clasp in L2A, seen in the image below:



Right Side

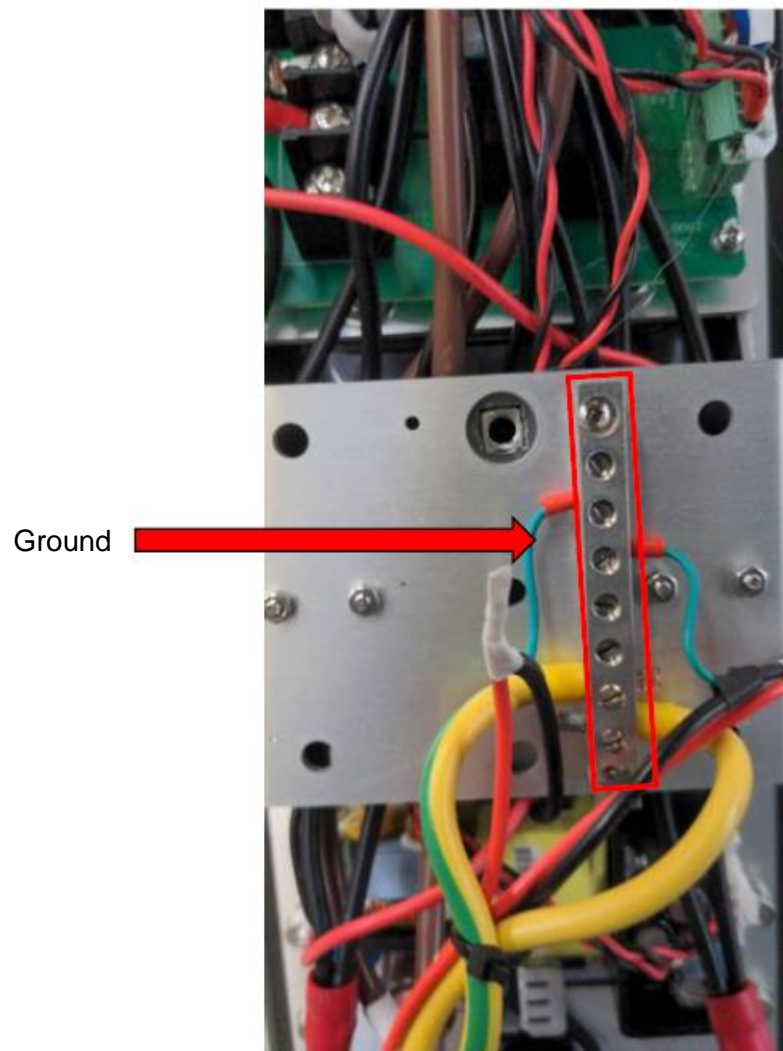
Connect the power to the lug of L1B, seen in the image below:



Connector B must attach the lug L1B to the clasp in L2B, seen in the image above.

Ground

Connect the ground source to one of the holes seen below:



Necessary Hardware



One (1) UP160J Charger Head Unit with attached charging cables, couplers, and base plate



Base plate hardware set

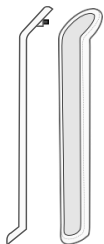


Two (2) pin-in hex security bolts



One (1) pin-in hex security bit

Charger housing posts must be ordered separately:



Cover
(UP-COV)



Pedestal
(UP-PMP)



Wall & Pole
(UP-WMP)
(UP-CMP)



Direct Burial
(UP-DBP)

The following tools may be needed:

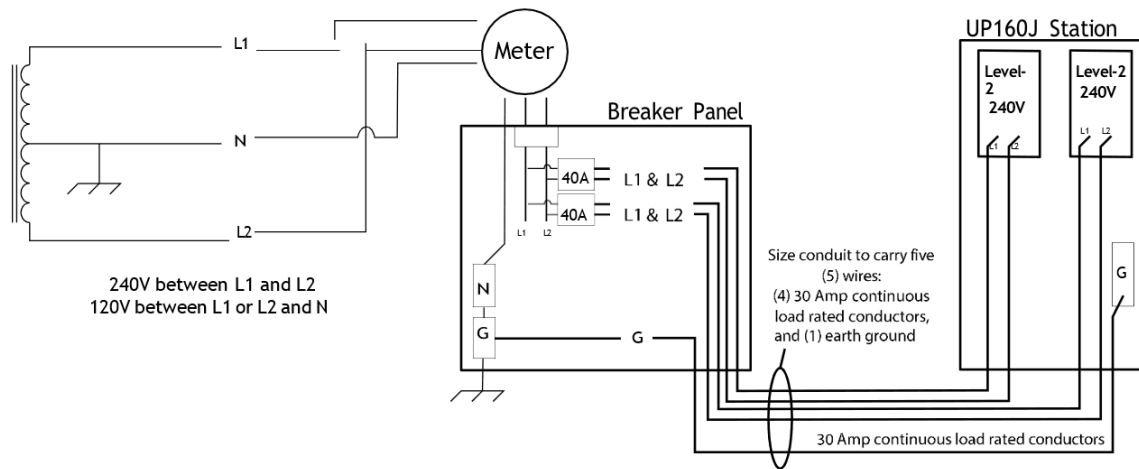
- Short driver handle (for standard bits)
- Right-angle driver ratchet (for standard bits)
- Set of SAE wrenches
- Hole-cutting drill bits to match conduit size
- Spirit level
- Smart phone and “GPS coordinate converter” app
- Internet-connected browser (tablet or laptop)

The following hardware may also be needed:

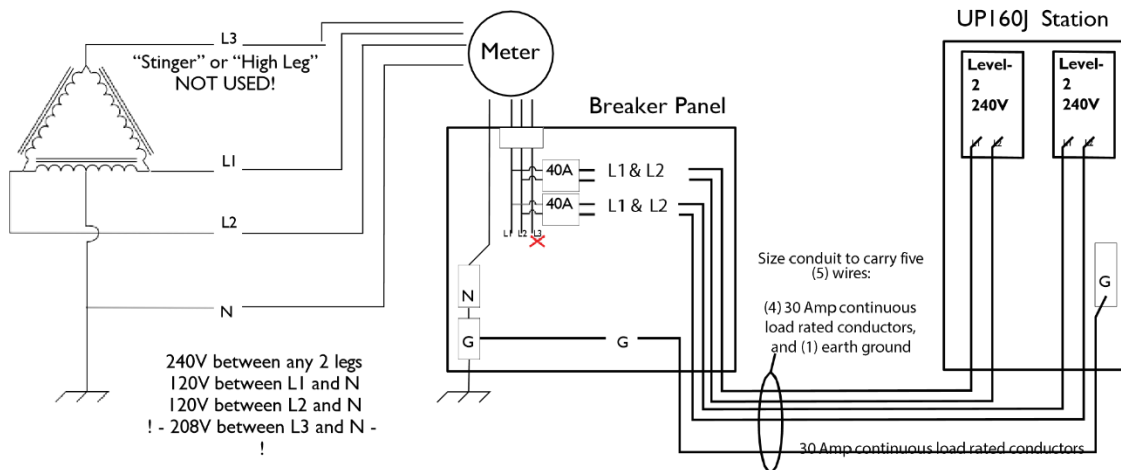
- Wall anchors and fasteners
- Washers
- Pad mount and concrete anchors
- Anchor security hardware

Service Wiring Options

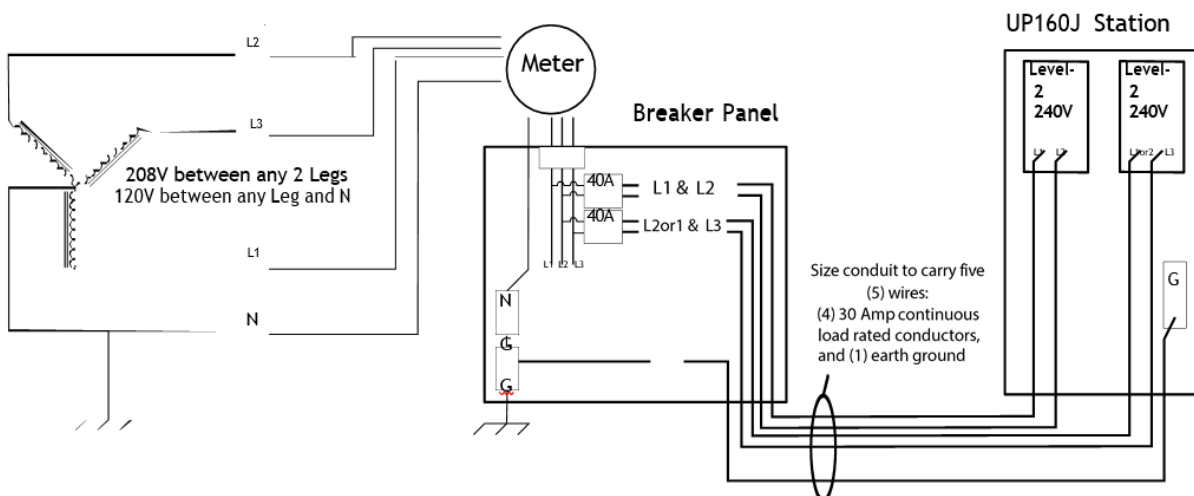
240/120V SINGLE Split Phase (preferred service)



240V 3 Phase, DELTA- Connected, one leg center tapped (difficulty balancing multiple chargers). Never connect the chargers to L3. The 3rd Leg of delta is 208 V with respect to Neutral/Earth and will trip the GMI.



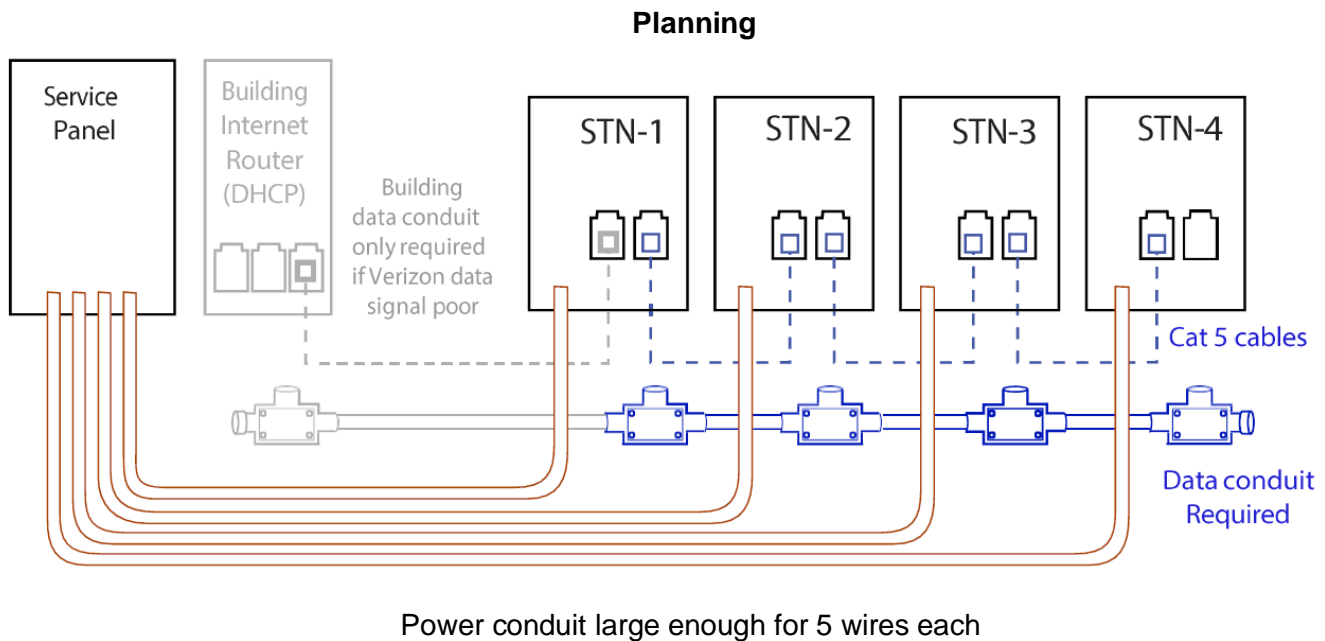
208V 3-Phase, WYE-Connected (attention to balancing required for multiple chargers)



Charger Housing Installation (Wiring)

If the charger housing units have not already been installed and prewired, complete this step now. Follow the charger housing installation manual (UP-HIM) that comes with the housing units. Then, ensure that the following steps have been completed before installing the charger head units.

Use this diagram for a general overview of a typical site. Power conduit is always required. Data conduit between chargers is always required between multiple chargers. Data conduit to the building is only needed if the onsite 4G data signal is poor. Always test the Verizon signal before planning the site.



Electrical Conduit

Run power conduit from the panel to each charger housing in accordance with the local electrical codes and regulations. For future upgradeability, ensure that the conduit is sized for a total of five (5) wires, including four (4) current-carrying conductors (connected to the 2 double pole 40amp breakers) and one (1) Earth conductor.

Pull Electrical Conductors

First, refer to page 5 for service-based wiring options.

For UP160J units, size 5 electrical conductors according to the NEC code using the following continuous load amperage limits: 4 current-carrying lines (30 amps continuous) and 1x earth ground conductor sized to match the largest current-carrying conductor. Pull these five (5) electrical conductors from the panel to each charger, leaving 40 inches of conductor extending from the inside edge of conduit wire protector on the charger side.

Data Conduit

If more than one charger is to be installed in the same area, affix a data conduit T-box below each charger housing, then run data conduit between each. Size data conduit to carry up two (2) Cat5e cables each.

Pull Cat5e data cable in accordance with the number of chargers at the site. Leave 6 ft. of cable extending from the top edge of conduit wire protector in each charger. Terminate all Cat5 Ethernet cables using identical wire (color) pattern on each end (see page 11 for more details).

Prepare Housing for Head Unit

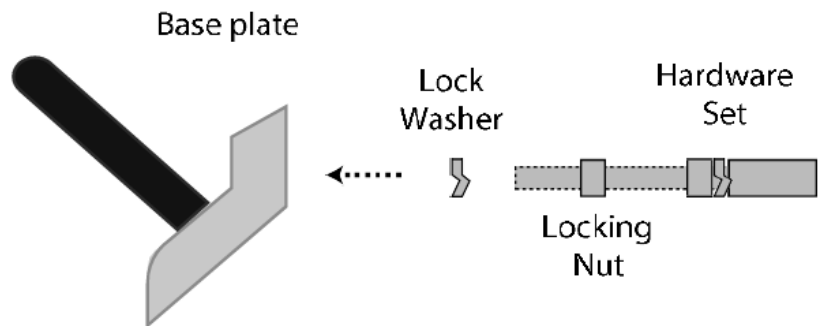
If a standard a ChargeTronix UP housing is not already installed, order and install one by following the steps in the housing installation manual (UP-HIM), followed by steps on page 6 of this manual.

Prepare the Base Plate

Attach the base plate hardware (provided) to the base plate by inserting it through the lock washer and into the back of the plate.

Thread the hardware set into the base plate until it is finger-tight.

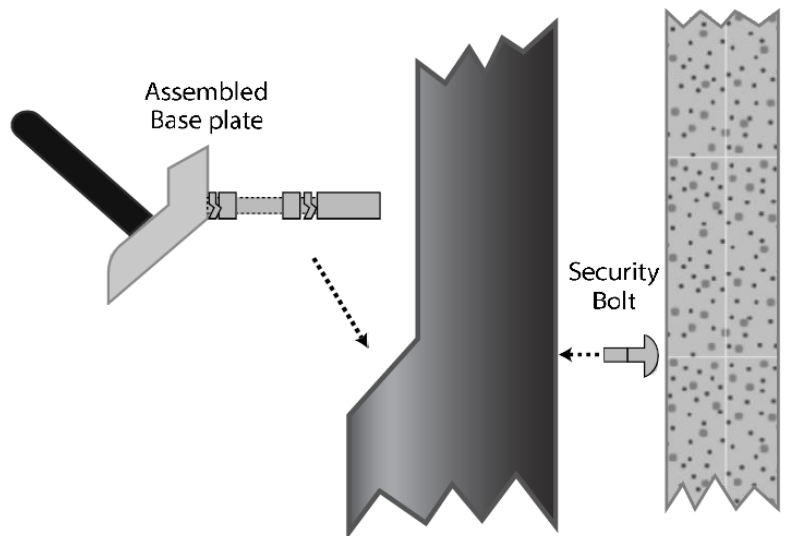
Now tighten the locking nut down onto the base plate with a wrench,



Attach the Base Plate to the Housing

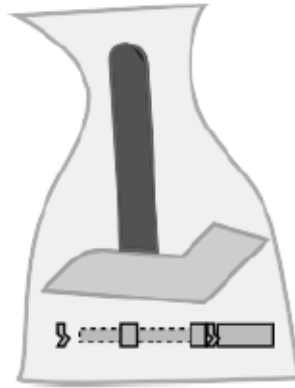
Next, insert the assembled base plate into the lower part of the housing unit and attach it from the back with the security bolt provided.

Adjust assembly as necessary before tightening the security bolt.



Keep head unit in protective box

Leave the head unit in the protective packaging until housing is securely installed, conduit has been run, and wiring has been pulled (electrical and data conduit, if required).



Unpack the Head Unit

Once the housing and electrical work is done, open the end of the box marked “open this end.”

Remove the round foam plug.

Remove the hardware bag first, then slide the cable out of the box first.

Finally slide the charger head unit together with its bag out of the box.

Retain the box

Retain the box and packaging in case it is needed for return or swap of equipment at a later date. Store the box in a dry place.

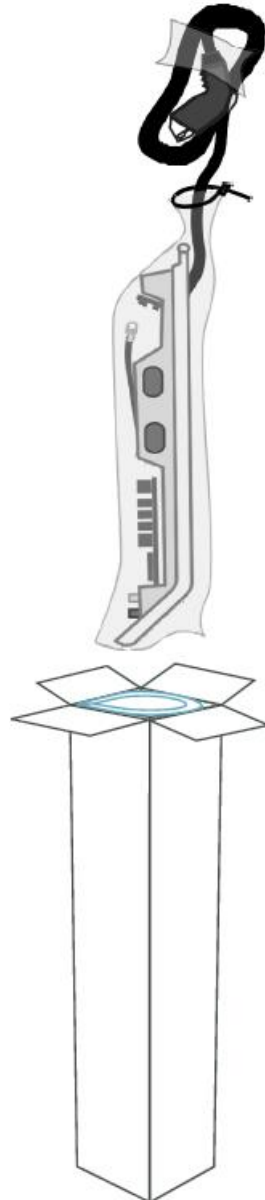
Repacking, if required

If repacking is required: first, place the charger head unit in the anti-static bag. Secure the neck of the bag with a tie.

Roll the cable up into a 15” diameter coil. Compress the coil, as shown, and tie with cling-film or plastic ties. DO NOT USE STICKY TAPE!

Insert the charger head unit (in its bag) top-down into the box. It will be a tight fit. Push it down until it reaches the bottom of the box.

Next, insert the compressed cable and push it down until it is 2” below the end of the box. Finally, insert the round foam plug.



Charger Head Unit Installation and Grounding

Insert Head Unit

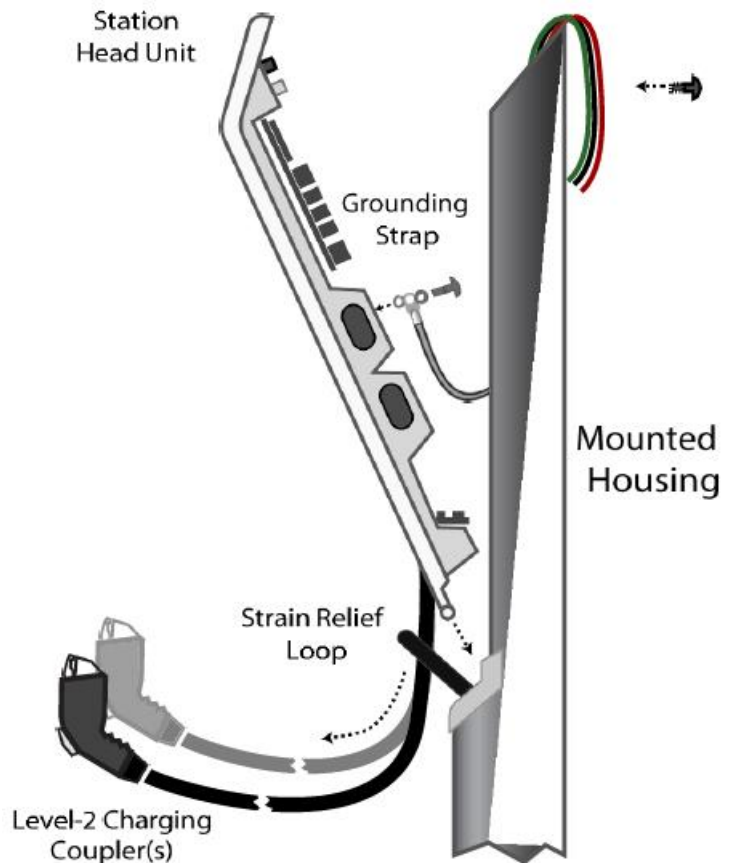
Unpack the charger head unit. Lay it on a soft surface near the charger housing and unravel the charging cable(s).

Thread the level-2 coupler(s) downwards through the black rubber strain relief loop near the base of the charger housing post. Pull most of the cable(s) through.

Loosen the grounding strap hardware at the free end of the strap. Check that the hardware order is as shown below.

Insert the charging head unit into the mounted housing post. The bottom of the charger head unit slides into the base plate slot.

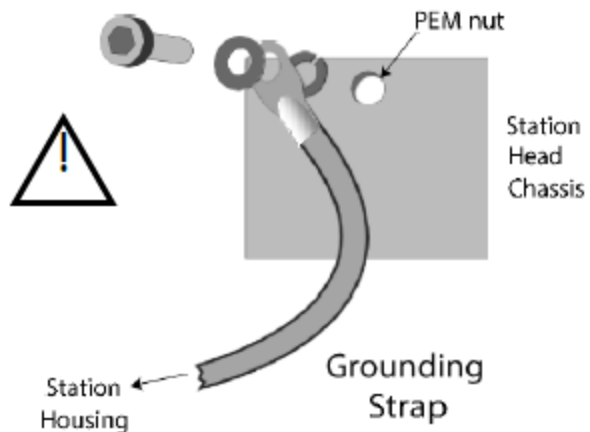
Rotate the head unit up towards the housing post and connect the free end of the grounding strap to the housing. Tighten!



Grounding Strap Connections

When attaching the grounding strap to the housing, ensure that the spring washer is completely compressed and that the hardware is in the following order:

- Bolt
- Flat Washer
- Strap
- Spring Washer
- Head Chassis with embedded PEM nut



Charger Power Wiring

Make Connections

Before connecting power wires to the UP160J, please carefully read the wiring options section of this manual, on page 4. If you are not 100% sure of the type of electrical service you are connecting to, call your local utility for assistance.

First, connect the green equipment grounding conductor to the grounding bar on the charger head unit.

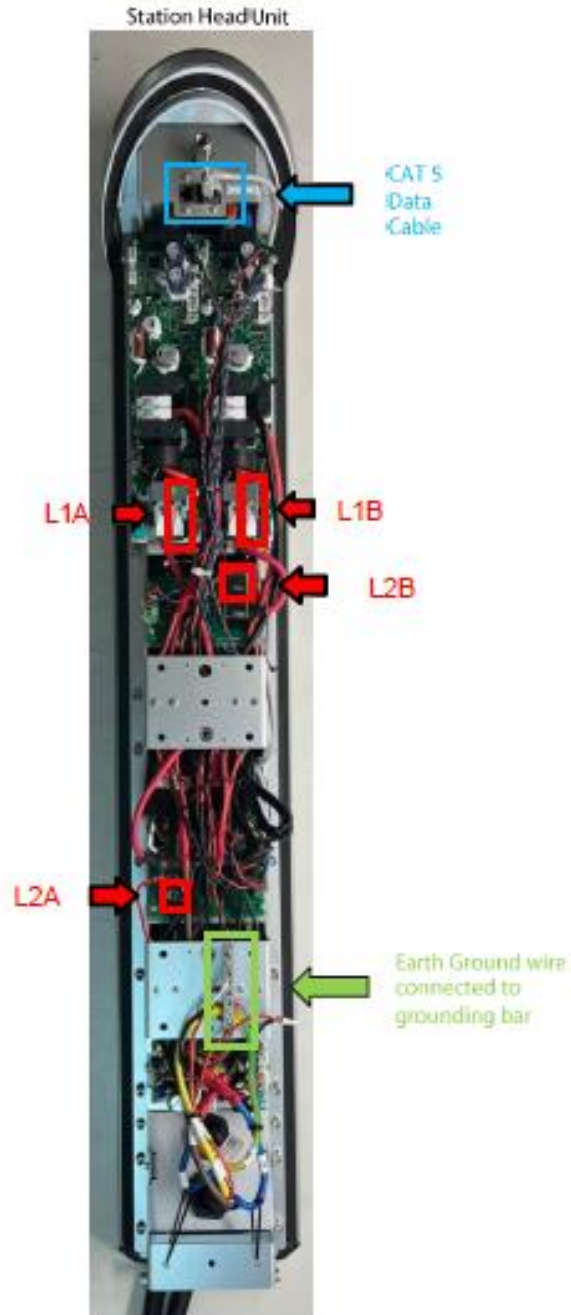
NOTE: The charger will not operate without a successful ground path to the service panel.

Insert one set of 240VAC conductors into the connectors labeled 'L1A' and 'L2A'.

Repeat this for the connections labeled 'L1B' and 'L2B'.

Insert the terminated (RJ45, male) Cat 5 data cable into the data input port at the top of the charger until it clicks.

Pull on all conductors to check that they are firmly attached. Tie down the conductors with provided tie-downs.



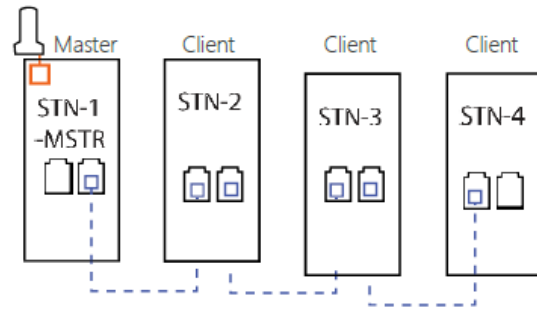
Charger Data Wiring

Test mobile signal strength at site

Before ordering charger head units, it is best to go to the site with a 4G Verizon Mobile phone and check the strength of the Verizon data signal. This will help you to plan one of the 'Master' chargers to be placed in a strong signal location. This 'Master' charger will data connectivity to all other chargers connected to it with a Cat 5 cable. If good Verizon signal is detected, order one charger head unit with -MTSR-V- suffix and proceed with option 1 below. If not, see option 2 below.

Option 1: Master Modem

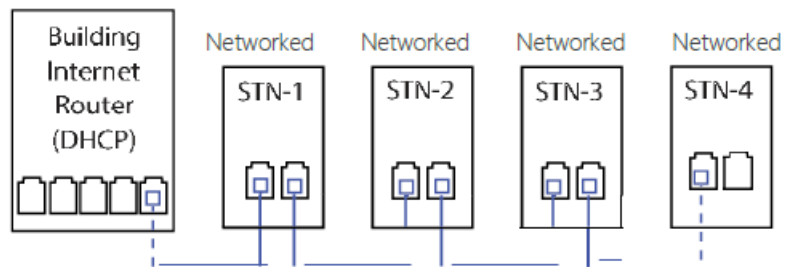
The most cost-effective way to network chargers is via master Modem charger. All chargers at the site can be supported by one Master charger daisy-chained with Cat5 cable to the rest of the chargers (Client). Configure the site as follows, in the figure to the right:



Option 2: Building Router

If no mobile carrier has a good signal at the site, you can also support all chargers by connecting them to the building internet router. However, make sure that the internet connection to this router is reliable. Chargers will now allow charging without an internet connection.

If this is not possible, you will have to order internet service from a local provider and have them install the router on the wall next to the service panel. Then, configure the site as follows, in the figure to the right:



RJ-45 Wiring (TIA/EIA-568-B T568B)

Pin	Pair	Wire	Color
1	2	1	white/orange
2	2	2	orange
3	3	1	white/green
4	1	2	blue
5	1	1	white/blue
6	3	2	green
7	4	1	white/brown
8	4	2	brown

Install data conduit and cable:

Regardless of the option chosen from above, install data conduit and pull Cat5 cable between each charger in a linear daisy chain manner, leaving 6ft. of Cat5 in each charger. Each network segment between chargers can have a maximum distance of 90 meters (300ft.)

Terminate cables with RJ45 male connectors. Standard terminator for Cat5 (T568B) wires is in the order 1, 2, 3, 6, 4, 5, 7, 8 on the modular jack at each end: orange/white, orange, green/white, blue, blue/white, green, brown/white, brown.

Test each segment of terminated cable with a simple battery-operated Ethernet tester (~\$20 at most computer supply stores.)

Network Setup

NOTE: chargers will not work until networked

Close Charger and Power-on

Close charger head unit and secure it using the top security bolt. Then, close the breakers feeding this charger only. The charger will boot up. The main screen will come on and each port indicator LED light should turn blue.

Enter Station ID

Locate your installer GRIDkey tag labeled “Station ID”.



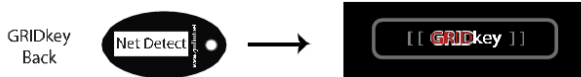
Place this tag over the “GRIDkey” logo on the front of the charger and move it around slowly until you hear a beep.

A provisioning screen will appear. Use the keypad to enter the full “ID Number” located on the housing label. Press ‘enter’. Use the Station ID GRIDkey again to confirm the number on the screen matches the ID on the charger housing. Write the Station ID for each charger at the site on the form provided on page 13. Then, push the blue-black button.



Network Setup- Continued

Network Auto-Detect

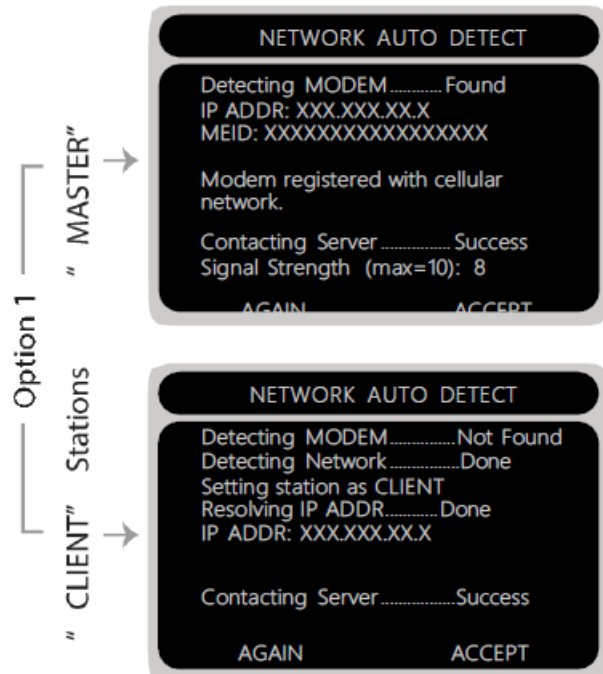


If you have chosen Option 1 on the previous page, (Onboard Master Verizon Modem), then start with your master charger.

Hold your Net Detect tag over the “GRIDkey” logo on the front of the master charger and move it around slowly until you hear a beep. Then, press the ‘Yes’ button. It will detect the Master Modem, present you with an IP, MEID, and try to register the modem with the cellular network. This may take some time. If it fails, wait 5 minutes and try again.

If it never registers, says “failure”, “weak signal”, or a signal below 4, you may want to install an external high gain antenna or remove the modem and resort to Option 2 or Option 3.

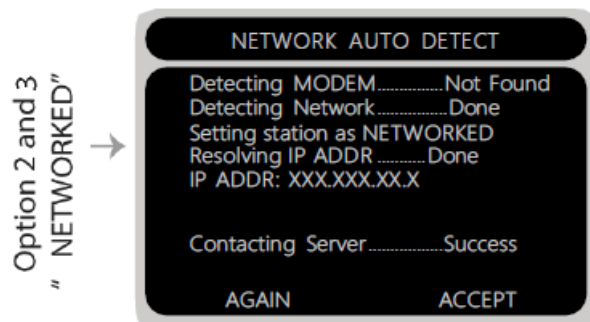
After the Master is successful, record the MEID, then use your Net Detect tag on each of the remaining chargers. They should set themselves as “CLIENT” and contact the server successfully.



If you have chosen Option 2 or Option 3, it does not matter which charger you start with, but you must first make sure the router is working as a DHCP server and has internet access.

Hold your Net Detect tag over the “GRIDkey” logo on the front of each charger and move it around slowly until you hear a beep. Then, press the ‘Yes’ button. It will detect the DHCP router, get assigned an IP address, and contact the server.

On failure, check the router, firewall, and then your data cable.



Online Site Registration

NOTE: chargers will not work until registered

Get GPS readings

Use a GPS reader or smart phone with decimal GPS software. Go to the site entrance where the driver would enter the site from the public road and record the GPS reading. It will look like this: (033.76220531, -118.13330135). Do the same in front of each charger and the service panel. Record all of the numbers below.

Note site and charger details:

Use the form below to make notes about the site and each charger at the site:

SITE Name _____	
SITE Street _____	ENTRA <u>1111-111111111111-1111-1111111111</u>
Address _____	PA <u>1111-111111111111-1111-1111111111</u>
SITE Driving Directions <div style="border: 1px solid black; height: 40px; width: 100%;"></div>	
Stations:	
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Final Step – Provision the charger on the network

Go to <http://www.gridkey.net>

Login and register a new site with information you recorded on this form. Call +(1)949-694-1644 for assistance with online registration.