

# BTC POWER

## AC Level 2 Charger

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INSTALLATION AND USER'S MANUAL (REVISION V)



## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

### PLEASE NOTE

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Changes or modifications to this product by other than an authorized service facility could void the product warranty.

If you have questions about the use of this product, contact your customer service representative.

This product should be operated by trained personnel only.

### MANUFACTURER:

## BTC POWER

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**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL****SAFETY GUIDELINES****1. Safety Guidelines****SAVE THESE INSTRUCTIONS**

This document contains important instructions for the installation, operation, and maintenance of AC Level 2 Charger with Models 30A, 40A, and 70A, Pedestal and Wall Mount, in Single and Dual Configurations. These instructions should be retained for future reference.

**1.1. Important Safety Instructions****WARNING****INSTRUCTIONS PERTAINING TO A RISK OF FIRE OR ELECTRIC SHOCK****DANGER****READ THIS MANUAL CAREFULLY BEFORE YOU BEGIN**

This **AC Level 2 Charger** manages electricity and may be hazardous. The equipment should be installed, adjusted, and serviced only by qualified electrical personnel familiar with the construction and operation of this type of equipment and the hazards involved, and in full compliance with all local and national codes and standards. Failure to observe this precaution could result in severe injury or death.

Read this manual completely and become familiar with the equipment prior to performing any procedures specified in the manual and energizing the equipment. Inspection and maintenance of this equipment should be performed in accordance with the procedures detailed in this manual.

In situations where it is not possible to perform an installation following the procedures stated in this document, contact BTCPower, Inc. BTCPower, Inc. will not be responsible for any damages that may occur resulting from custom installations that are not stated in this document.

## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

## SAFETY GUIDELINES

There are no user serviceable parts inside. For service, please contact customer service or your local distributor. **DO NOT ATTEMPT TO REPAIR THE CHARGE STATION YOURSELF. SERVICE TO THE UNIT SHALL ONLY BE PERFORMED BY A QUALIFIED PERSONNEL.**

If the charging cable is somehow damaged, do not operate the charge station. Contact your service representative for service immediately. Shut down the power to the unit by switching the breaker on the supply panel to off position.

### 1.2. Symbols and Definitions

Please take special attention to all information marked with the following symbols. These symbols may be found throughout the manual and on labels affixed to the equipment unit.



#### DANGER

Indicates High Voltage. It calls attention to items or operations that could be dangerous to person/s operating this equipment. Read and follow the instructions carefully. Failure to do so will result in severe injury or possibly death.



#### WARNING

Indicates a hazard or unsafe practice which, if not avoided, may result in severe injury or possibly death.



#### CAUTION

Indicates a hazard or unsafe practice which, if not avoided, may result in minor to moderate injury.



#### NOTE

Indicates important information to consider, otherwise, improper installation and/or damage to components may occur.

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**SYSTEM OVERVIEW**

**2. System Overview**

**BRIEF DESCRIPTION OF AC LEVEL 2 CHARGER**

The BTCPower 208-240VAC Single Phase Level 2 EVSE acts as a safety device to supply the electric vehicle or hybrid vehicle on-board AC/DC charger with electricity to charge its high voltage battery pack. It is capable of charging all EV compliant with the SAE J1772 charging standard. It is available as a wall-mount or as a freestanding pedestal.

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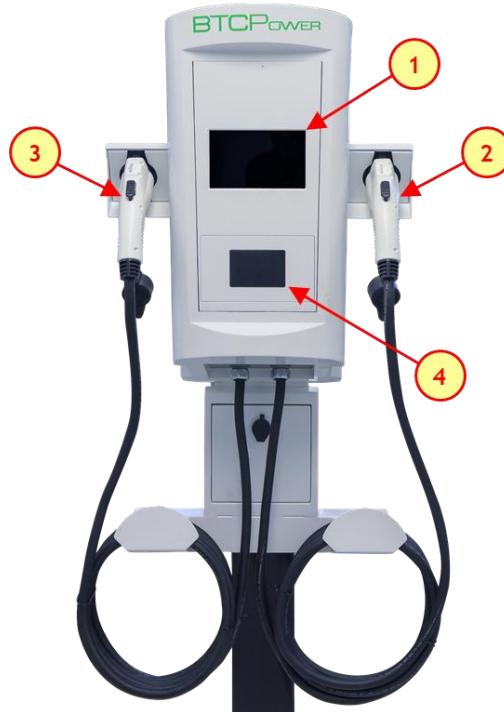
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**EQUIPMENT DESCRIPTION**

**3. Equipment Description**

**30A / 40A / 70A SINGLE OR DUAL PORT WALL MOUNT CHARGING STATION**



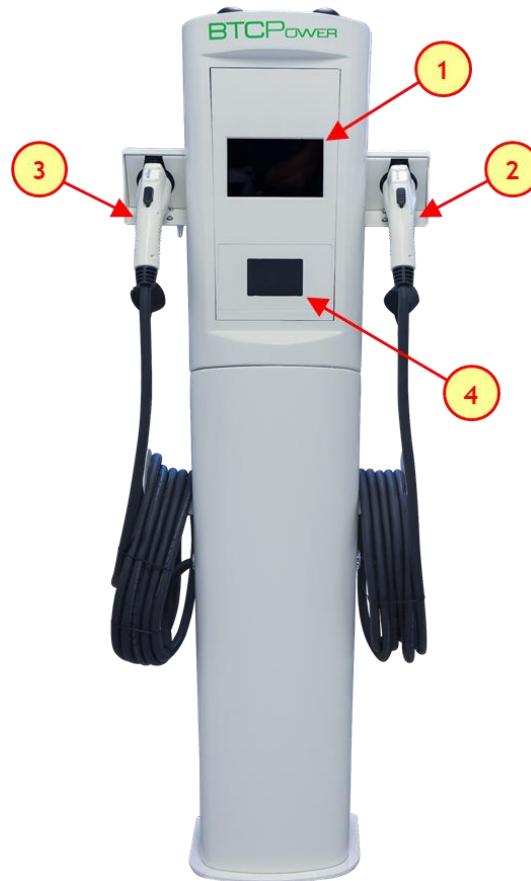
**COMPONENT DESCRIPTION**

- |  |   |
|--|---|
| 1. 7" LCD Panel Display  | 4. Payment System<br><u>Available Options:</u> <ul style="list-style-type: none"><li>- RFID Reader</li><li>- Encrypted Insert Magstripe Card Reader</li></ul> |
| 2. Charging Connector 2 (for dual configuration), 1 (for single configuration) |   |
| 3. Charging Connector 1 (for dual configuration)                               |   |

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## EQUIPMENT DESCRIPTION

### 30A / 40A / 70A SINGLE OR DUAL PORT PEDESTAL CHARGING STATION



### COMPONENT DESCRIPTION

1. 7" LCD Panel Display
2. Charging Connector 2 (for dual configuration), 1 (for single configuration)
3. Charging Connector 1 (for dual configuration)

4. Payment System

Available Options:

- RFID Reader
- Encrypted Insert Magstripe Card Reader



Both the wall-mount and pedestal charger can come with an optional Cable Retractor. Refer to L2 Charger Cable Retractor Installation Manual for the details.

**AC Level 2 Charger  
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**SYSTEM SPECIFICATION**

**4. System Specification**

**4.1. Single or Dual Port Wall Mount Charging Station**

Model Numbers: **EVP-2001-30-W-001, EVP-2002-30-W-001,  
EVP-2001-40-W-001, EVP-2002-40-W-001, EVP-2001-70-W-0001**

SKUs: **L2W-30-240-16, L2W-30-240-15, L2W-40-240-16, L2W-40-240-15, L2W-70-240-16**

PARAMETER	SINGLE/DUAL 30A	SINGLE/DUAL 40A	SINGLE 70A
Power per Port	7.2kW (240VAC @30A)	9.6kW (240VAC @ 40A)	16.8kW (240VAC @ 70A)
<b>Electrical Service</b>			
Power	240/208 VAC, 30A Load with 40A Branch Circuit per Port	240/208 VAC, 40A Load with 50A Branch Circuit per Port	240/208 VAC, 70A Load with 100A Branch Circuit per Port
Service Panel	40A Breakers per Port (No GFCI)	50A Breakers per Port (No GFCI)	100A Breakers per Port (No GFCI)
Service Wiring	3-Wire (L1, L2, Earth Ground)		
<b>Functional Interface</b>			
Connector Type	SAE J1772		
Charging Protocol	SAE J1772		
Standard Cable Length	22 ft		
Cable Retractor	Optional (Cable 18 ft w/ Cable Management)		
LCD Display	500 Nits, 7" Color, 800 x 480, UV Protected		
Card Reader	ISO 14443 Type A & B, ISO 18092 NFC		
<b>Safety &amp; Connectivity</b>			
Ground Fault Detection	20 mA		
Plug-Out Detection	SAE J1772		
Power Measurement (opt)	Accuracy: 1% – 5%		
Power Report Interval	Every 15 minute on the hour		
Wireless	2.4 GHz Wi-Fi (802.11 b/g/n)		
Wide Area Network	4G LTE Modem, Wi-Fi, Ethernet		
Communication Protocols	OCPP 1.5 and 1.6 Compliant		
<b>Safety and Operation</b>			
Regulatory Compliance	ETL Certified for USA and cUL Certified for Canada; Complies with UL 2594, UL 2231-1, UL 2231-2, and NEC Article 625, EMC: FCC Part 15 Class A		
Operating Temperature	-30°C to +60°C (-22°F to 140°F)		
Storage Temperature	-50°C to +80°C (-58°F to 176°F)		
Humidity	95% Non-Condensing		
<b>Mechanical Characteristics</b>			
Enclosure Rating	NEMA 3R		
Weight	Single: 68 lbs Dual: 78 lbs	Single: 78 lbs Dual: 78 lbs	Single: 47 lbs

Specifications are subject to change, without prior notice.

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**SYSTEM SPECIFICATION**

**4.2. Single or Dual Port Pedestal Charging Station**

Model Numbers: **EVP-2001-30-P-001, EVP-2002-30-P-001,  
EVP-2001-40-P-001, EVP-2002-40-P-001, EVP-2001-70-P-0001**

SKUs: **L2P-30-240-15, L2P-30-240-16, L2P-40-240-15, L2P-40-240-16, L2P-70-240-16**

PARAMETER	SINGLE/DUAL 30A	SINGLE/DUAL 40A	SINGLE 70A
Power per Port	7.2kW (240VAC @30A)	9.6kW (240VAC @ 40A)	16.8kW (240VAC @ 70A)
<b>Electrical Service</b>			
Power	240/208 VAC, 30A Load with 40A Branch Circuit per Port	240/208 VAC, 40A Load with 50A Branch Circuit per Port	240/208 VAC, 70A Load with 100A Branch Circuit per Port
Service Panel	40A Breakers per Port (No GFCI)	50A Breakers per Port (No GFCI)	100A Breakers per Port (No GFCI)
Service Wiring	3-Wire (L1, L2, Earth Ground)		
<b>Functional Interface</b>			
Connector Type	SAE J1772		
Charging Protocol	SAE J1772		
Standard Cable Length	21 ft		
Cable Retractor	Optional (Cable 18 ft w/ Cable Management)		
LCD Display	500 Nits, 7" Color, 800 x 480, UV Protected		
Card Reader	ISO 14443 Type A & B, ISO 18092 NFC		
<b>Safety &amp; Connectivity</b>			
Ground Fault Detection	20 mA		
Plug-Out Detection	SAE J1772		
Power Measurement (opt)	Accuracy: 1% – 5%		
Power Report Interval	Every 15 minute on the hour		
Wireless	2.4 GHz Wi-Fi (802.11 b/g/n)		
Wide Area Network	4G LTE Modem, Wi-Fi, Ethernet		
Communication Protocols	OCPP 1.5 and 1.6 Compliant		
<b>Safety and Operation</b>			
Enclosure Rating	NEMA 3R		
Regulatory Compliance	ETL Certified for USA and cUL Certified for Canada; Complies with UL 2594, UL 2231-1, UL 2231-2, and NEC Article 625, EMC: FCC Part 15 Class A		
Operating Temperature	-30°C to +60°C (-22°F to 140°F)		
Storage Temperature	-50°C to +80°C (-58°F to 176°F)		
Humidity	95% Non-Condensing		
<b>Mechanical Characteristics</b>			
Enclosure Rating	NEMA 3R		
Weight	Single : 85 lbs Dual : 98 lbs	Single : 77 lbs Dual : 111 lbs	Single : 94 lbs

Specifications are subject to change, without prior notice.

## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# PRE-INSTALLATION

### 5. Pre-Installation

Prior to performing any installation activities, it is important to read through each of the items outlined in this section, which are essential for the installation process.

#### 5.1. Location Selection

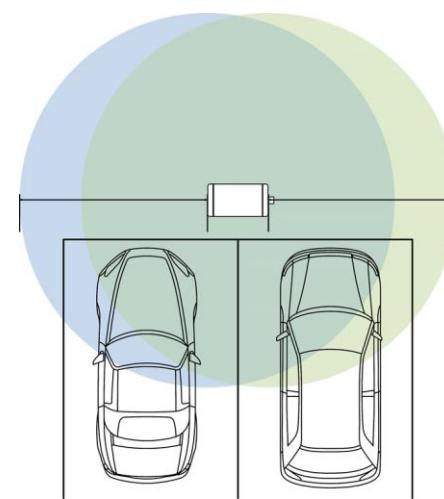
Items to consider when choosing a location to install the unit:

- Standards for Accessible Design (refer to section 5.2)
- Conformance to all governing standards for location and placement of the charger
- Communications Connectivity (refer to section 5.3)
- Local Conditions
  - Area is not exposed to high temperatures, dust, corrosive fumes, combustible materials, or explosive gases
  - Area is dry and well-ventilated
  - Clearances at both sides for proper ventilation
  - Clearance at front and sides for accessibility during service (refer to Section 6.1.1)
  - Wiring and conduit needed to connect the charger to the circuit panel
  - Location of vehicle's charging inlets while parked
  - Use of protective bollards and wheel stops to protect the charger

#### 5.2. Cable Reach

The cables of the charger come in different lengths depending on the charger's configuration and cable/connector type. The table below shows the connector type with its corresponding cable reach while the figure shows the radius in which the two (2) DC connectors can be used.

Model	Connector	Cable Reach
Pedestal	SAE Cable	21 feet
Wall Mount	SAE Cable	22 feet



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**AC Level 2 Charger  
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STANDARDS FOR ACCESSIBLE DESIGN for Americans with Disabilities is applicable when choosing the location and placement of all Electric Vehicle Supply Equipment. The following is a direct excerpt from the 2010 ADA Standards for Accessible Design:

[http://www.ada.gov/2010ADASTandards\\_index.htm](http://www.ada.gov/2010ADASTandards_index.htm)

"The Department of Justice published revised regulations for Titles II and III of the Americans with Disabilities Act of 1990 "ADA" in the Federal Register on September 15, 2010. These regulations adopted revised, enforceable accessibility standards called the 2010 ADA Standards for Accessible Design "2010 Standards" or "Standards". The 2010 Standards set minimum requirements – both scoping and technical – for newly designed and constructed or altered State and local government facilities, public accommodations, and commercial facilities to be readily accessible to and usable by individuals with disabilities.

Adoption of the 2010 Standards also establishes a revised reference point for Title II entities that choose to make structural changes to existing facilities to meet their program accessibility requirements; and it establishes a similar reference for Title III entities undertaking readily achievable barrier removal.

The Department has assembled this online version of the official 2010 Standards to increase its ease of use. This version includes:

- 2010 Standards for State and Local Government Facilities Title II
- 2010 Standards for Public Accommodations and Commercial Facilities Title III

The Department has assembled into a separate publication the revised regulation guidance that applies to the Standards. The Department included guidance in its revised ADA regulations published on September 15, 2010. This guidance provides detailed information about the Department's adoption of the 2010 Standards including changes to the Standards, the reasoning behind those changes, and responses to public comments received on these topics. The document, Guidance on the 2010 ADA Standards for Accessible Design, can be downloaded from:

<http://www.ada.gov>

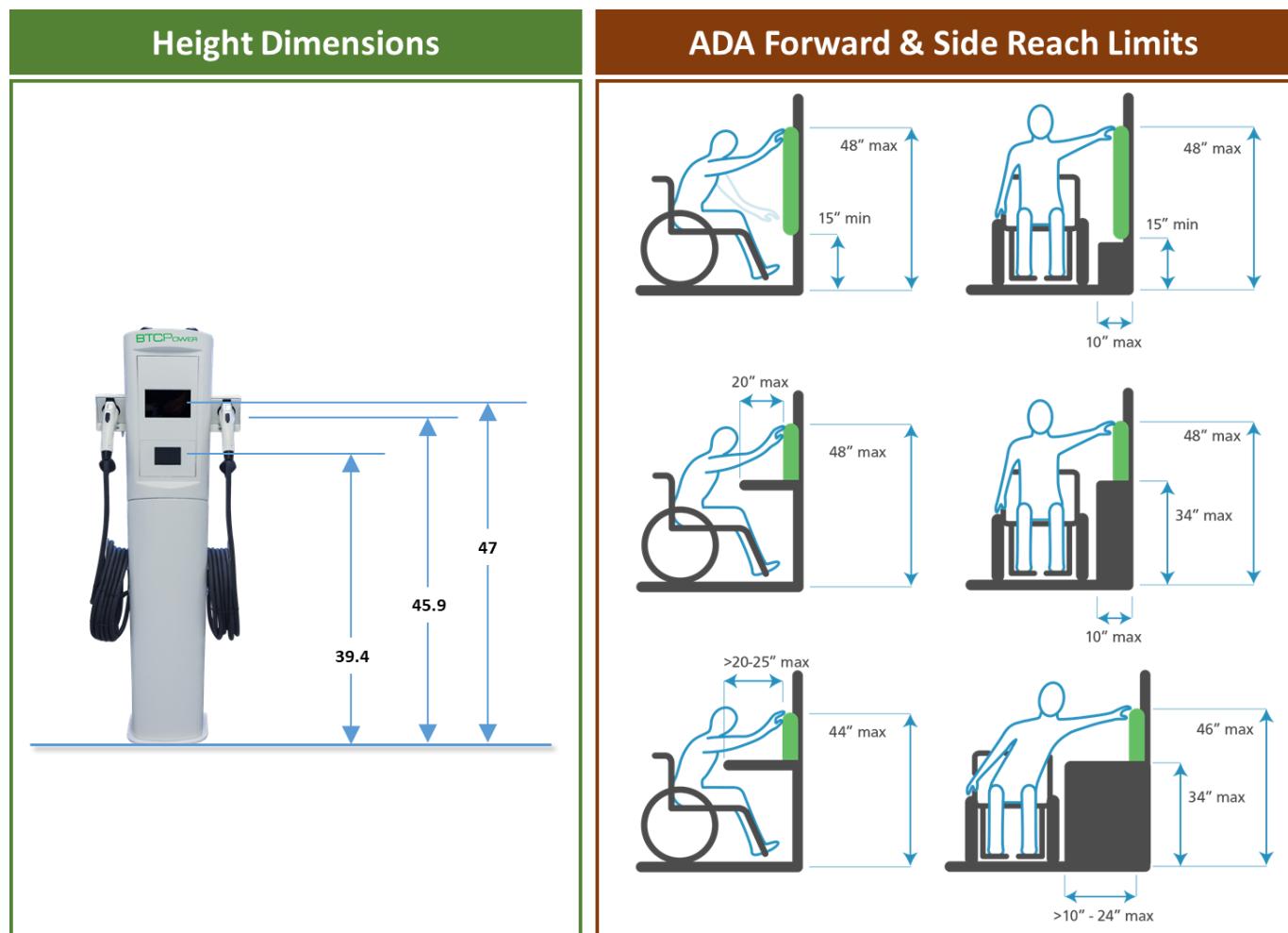
## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

## PRE-INSTALLATION

For information about the ADA, including the revised 2010 ADA regulations, please visit the Department's website [www.ADA.gov](http://www.ADA.gov); or, for answers to specific questions, call the toll-free ADA Information Line at 800- 514-0301 (Voice) or 800-514-0383 (TTY)."

### Compliance to ADA Standards

Access to all the controls and commands including the buttons and the card reader, must comply with local codes and ADA requirements. That includes being under 48" of distance to the ground.



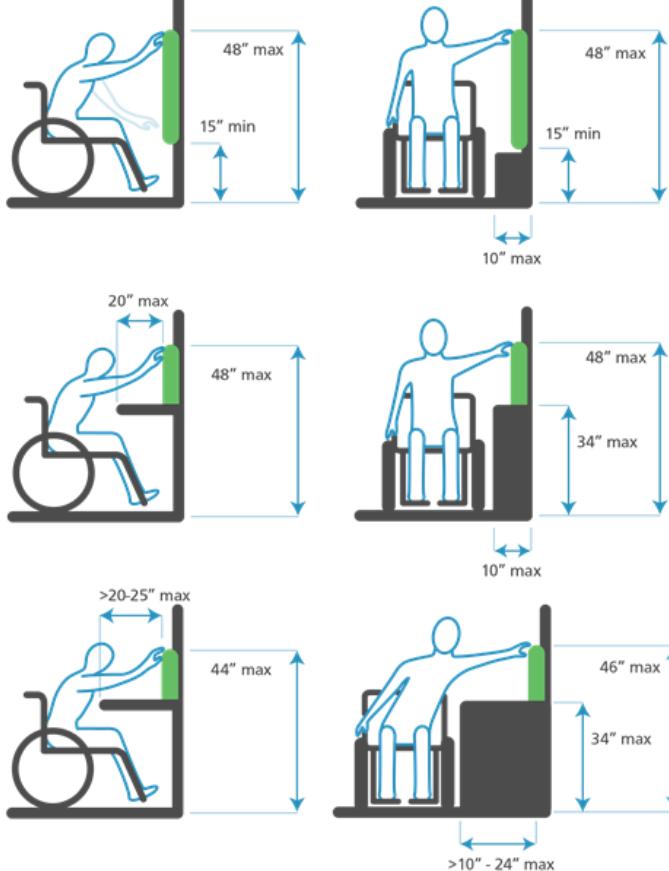
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## PRE-INSTALLATION

### Height Dimensions



### ADA Forward & Side Reach Limits



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## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

### PRE-INSTALLATION

#### 5.3. Communications Connectivity

##### Site Survey Process

Follow the procedure steps below and record all results and information using the Site Survey Form in Annex A.

- 1) Use a cellular signal meter that can measure RSRP, RSRQ and SNIR.
  - Use the same antenna and spacing as charger
    - Signal strength tool and antenna can be purchased from BTCPower or use Squid 4G M2M Tool or equivalent
    - Antenna spacing should be 6 – 8" apart
  - In a pinch, use a SureCall RF Signal Meter CM-METER-01 or equivalent and use the RSSI reading but don't use for boosted signals
    - In the event that the RSSI doesn't meet criteria, then use a meter that can measure RSRP, RSRQ and SNIR
- 2) Measure and record the signal strength at each charger location and note description of location.
  - Outdoors, indoor parking structure
  - Obstructions if there are any
  - Record location with photo and GPS coordinates
- 3) Ensure that location meets the Cellular Signal Strength Criteria as shown below:

Parameter	Min Value	Device	Notes
RSSI	-69 dBm	SureCall RF Signal Meter CM-METER-01 or equivalent	If RSSI < - 69dBm, measure RSRP, RSRQ, and SNIR
RSRP	-100 dBm	BTC-Cellular Meter or Squid 4G M2M Tool or equivalent	Please consult BTCPower Application Engineering
RSRQ	-11 dBm	BTC-Cellular Meter or Squid 4G M2M Tool or equivalent	Please consult BTCPower Application Engineering
SINR	> 6 dB	BTC-Cellular Meter or Squid 4G M2M Tool or equivalent	For Reference

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## PRE-INSTALLATION

- 4) Use the Bullet M2 HP in measuring the Wi-Fi Signal Strength. See sections 6.3 and 6.4 for the set-up.
- 5) Ensure that location meets the Wi-Fi Signal Strength Criteria as shown below:

Parameter	Min Value	Device	Notes
RSSI	-62 dBm	Ubiquiti Bullet M2 HP	---
SINR	> 10 dB	Ubiquiti Bullet M2 HP	---

### 5.4. List of Parts, Materials, and Tools Needed for Installation

#### Tools and Supplies Needed during Installation

Item	Part Description	Quantity
1	1/4" Lag Bolt	6
2	Concrete Expansion Bolt	4
3	Box Level	1
4	1/2" Torque Wrench	1
5	1/4" Washer	6
6	Back Door Key (shipped with the unit)	2
7	3/16" Allen Wrench	1
8	Philips Head Screwdriver	1
9	Installation Manual	1

#### Special Tools & Hardware Torque Value

Tools/Hardware	Torque Specification	Tolerance
6 – 32 UNC	13 in-lbs.	+/- 2 in-lbs.
10 – 32 UNF	30 in-lbs.	+/- 5 in-lbs.
1/4 – 20 UNC	53 in-lbs.	+/- 7 in-lbs.
1/2 – 13 UNC	48 in-lbs.	+/- 7 in-lbs.
M6 x 1 Liquid Tight Fitting	30 in-lbs.	+/- 5 in-lbs.
Fuse Block Lugs, 8AWG	40 in-lbs.	+/- 5 in-lbs.
Fuse Block Lugs, 6AWG	45 in-lbs.	+/- 5 in-lbs.
Ground Terminal Screws, 14 – 10AWG	34 in-lbs.	+/- 5 in-lbs.
Ground Terminal Screws, 8AWG	38 in-lbs.	+/- 5 in-lbs.
1/4 – 20" Lock Nut	53 in-lbs.	+/- 7 in-lbs.

## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

### 6. Installation

Make sure to study all drawings provided by the supplier for the installation. These include arrangement drawings (front, end, and plan views). Connections to the equipment that may be required to meet any local codes such as mats, screens, or railings, will not be furnished.

## IMPORTANT SAFETY INSTRUCTIONS

### SAVE THESE INSTRUCTIONS

The **AC Level 2 Charger** should be installed in accordance with local codes and all applicable ordinances.

Read all installations instructions carefully prior to performing the installation.



#### DANGER

The equipment utilizes high voltages, only qualified electrical personnel familiar with the operation and construction should install, adjust, modify, and service this equipment. Failure to observe this precaution could result to severe injury or death.



#### WARNING

#### INSTRUCTIONS PERTAINING TO A RISK OF FIRE OR ELECTRIC SHOCK

- This device should be supervised when used around children.
- Do not perform any live wire operations.
- Do not touch the inside of the equipment while electrical power is applied.
- 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.
- The equipment may be installed outdoors but only use under environment conditions as stated in this document.

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## **INSTALLATION**

- This equipment includes capacitive components such as electrolytic capacitors. Some parts may still remain charged inside of the unit even after the input power is disconnected.
- This charger should not be modified in any way. This will void the warranty, compromise protection and could result in a possible shock or fire hazard.
- Personal Protective Equipment should be used at all times when working with the equipment.
- Equipment should not be opened and serviced in rain or snow conditions.



**CAUTION**

During installation of the unit, ensure that the charge station's supply cable is secured in such a way that it will not be tripped over, stepped on, pulled on, or somehow subjected to damage or stress.

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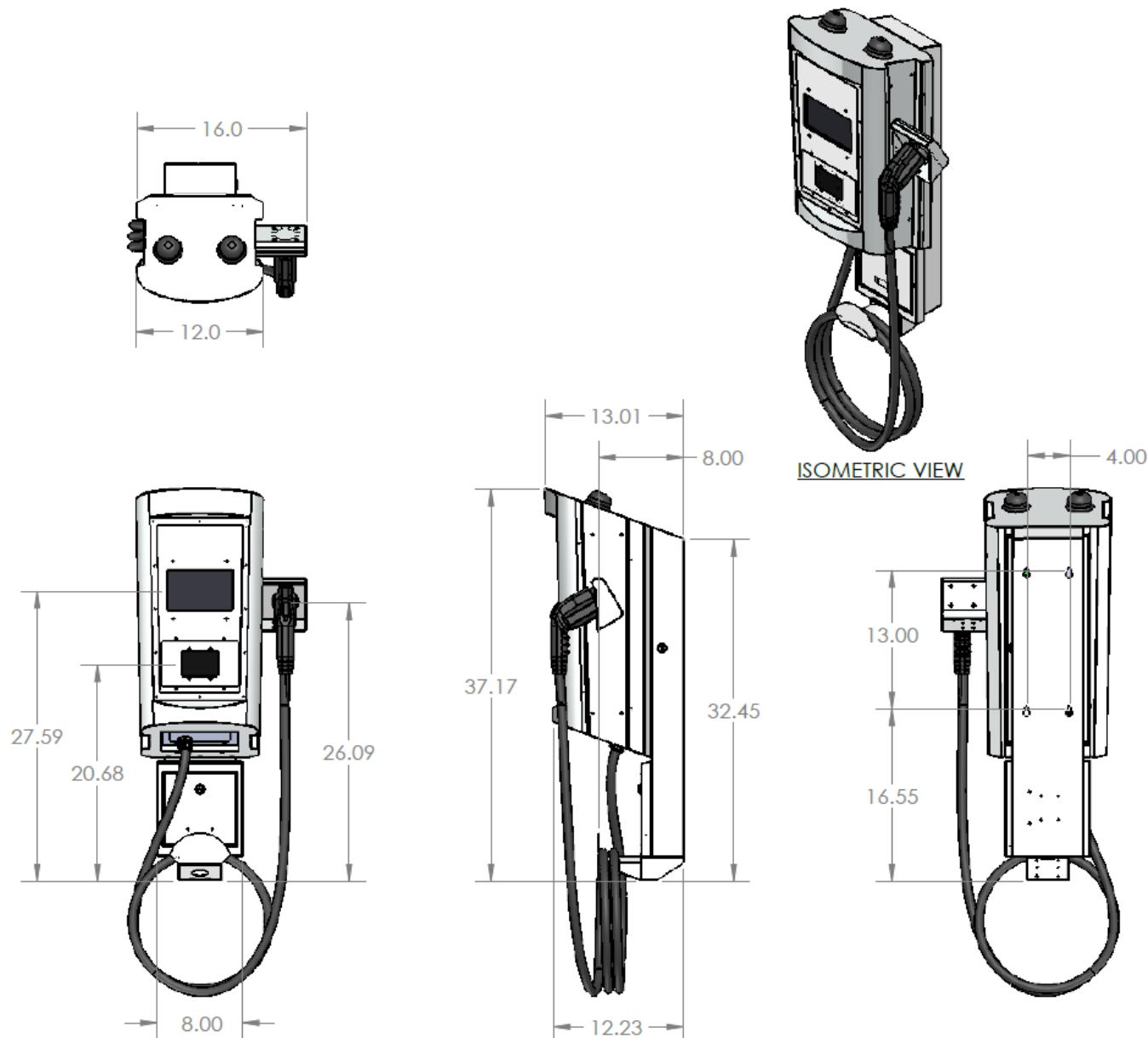
# INSTALLATION

### 6.1. Mounting Procedures

#### 6.1.1. Clearance Around the Unit

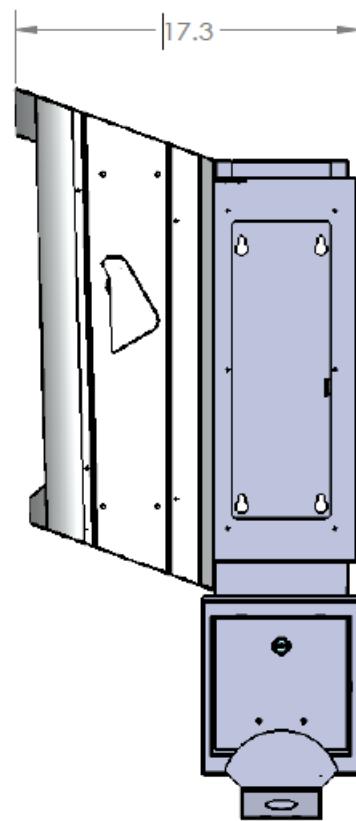
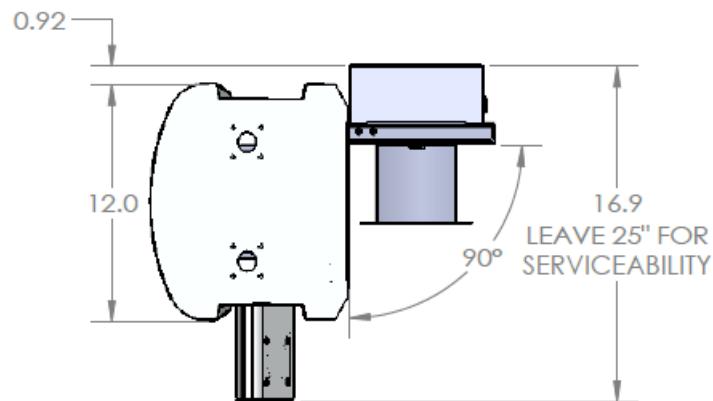
Clearance surrounding the unit must be considered for proper ventilation and service accessibility. Refer to the installation drawings as illustrated below.

#### Single – Wall Mount Charger Installation Drawing



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**INSTALLATION**



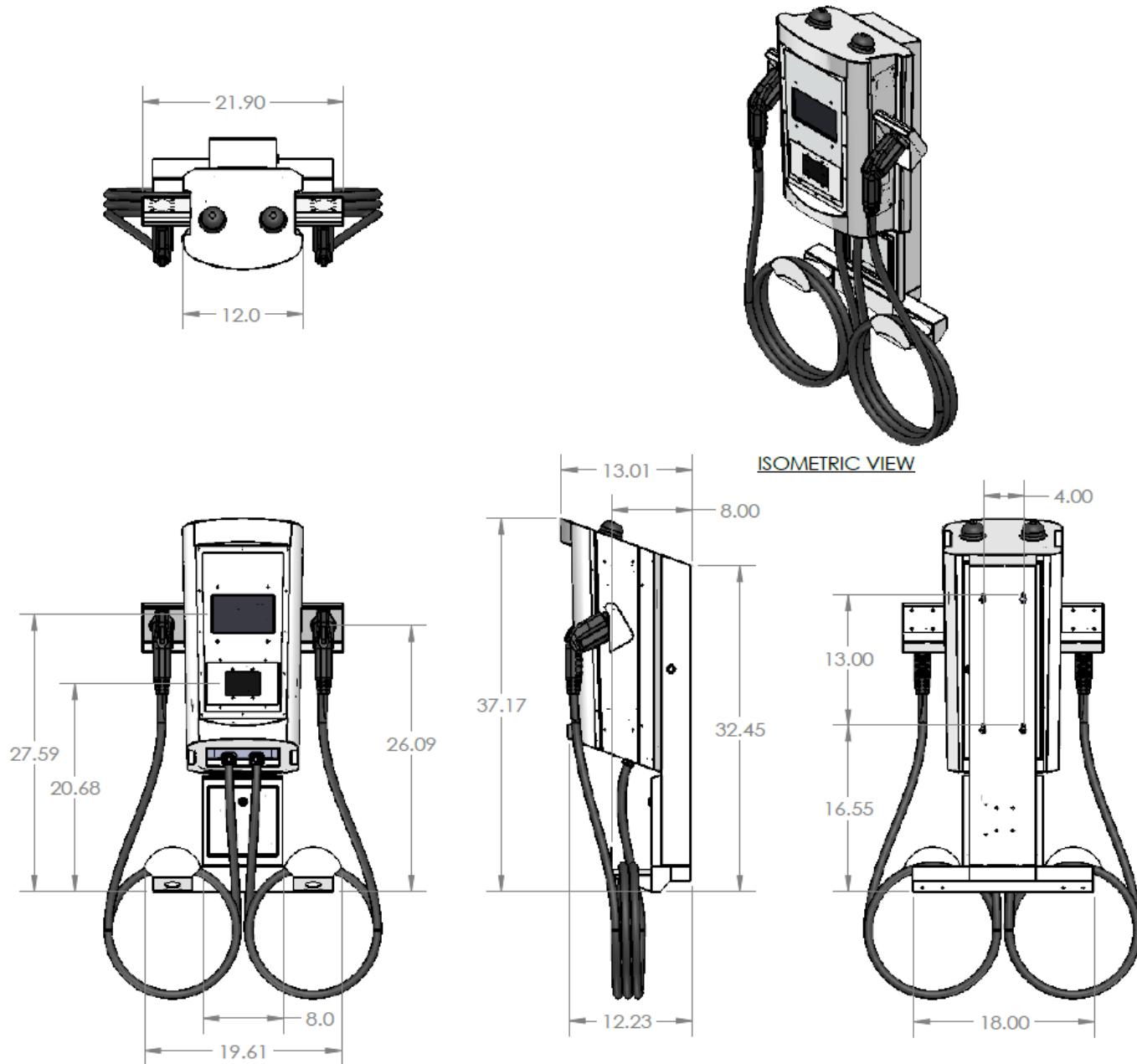
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# INSTALLATION

**Dual – Wall Mount Charger Installation Drawing**

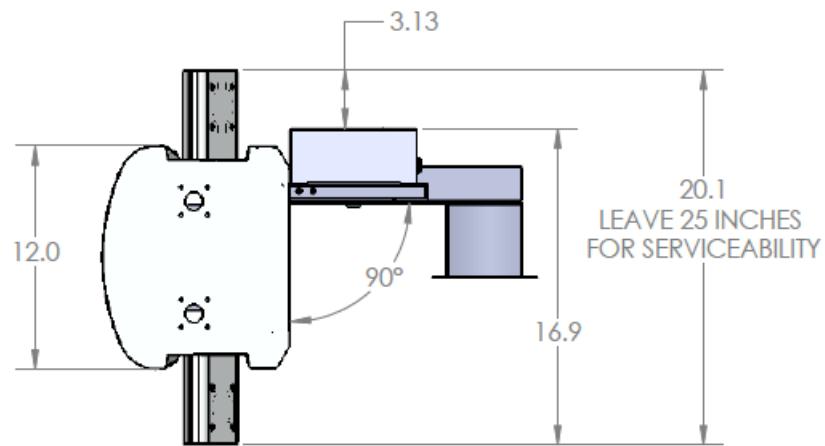


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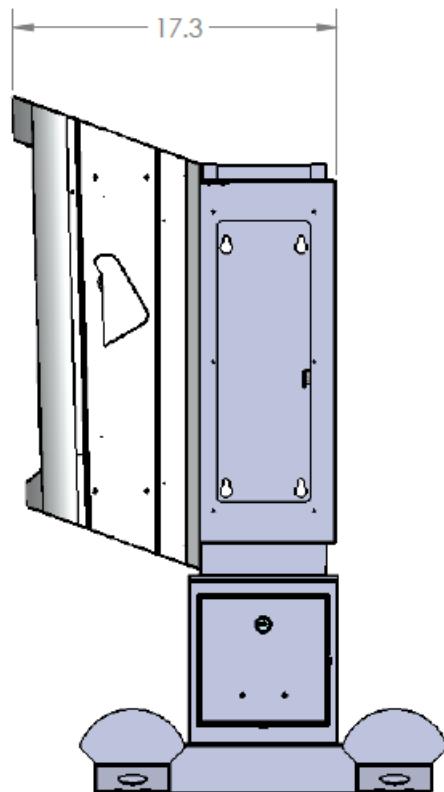
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## INSTALLATION



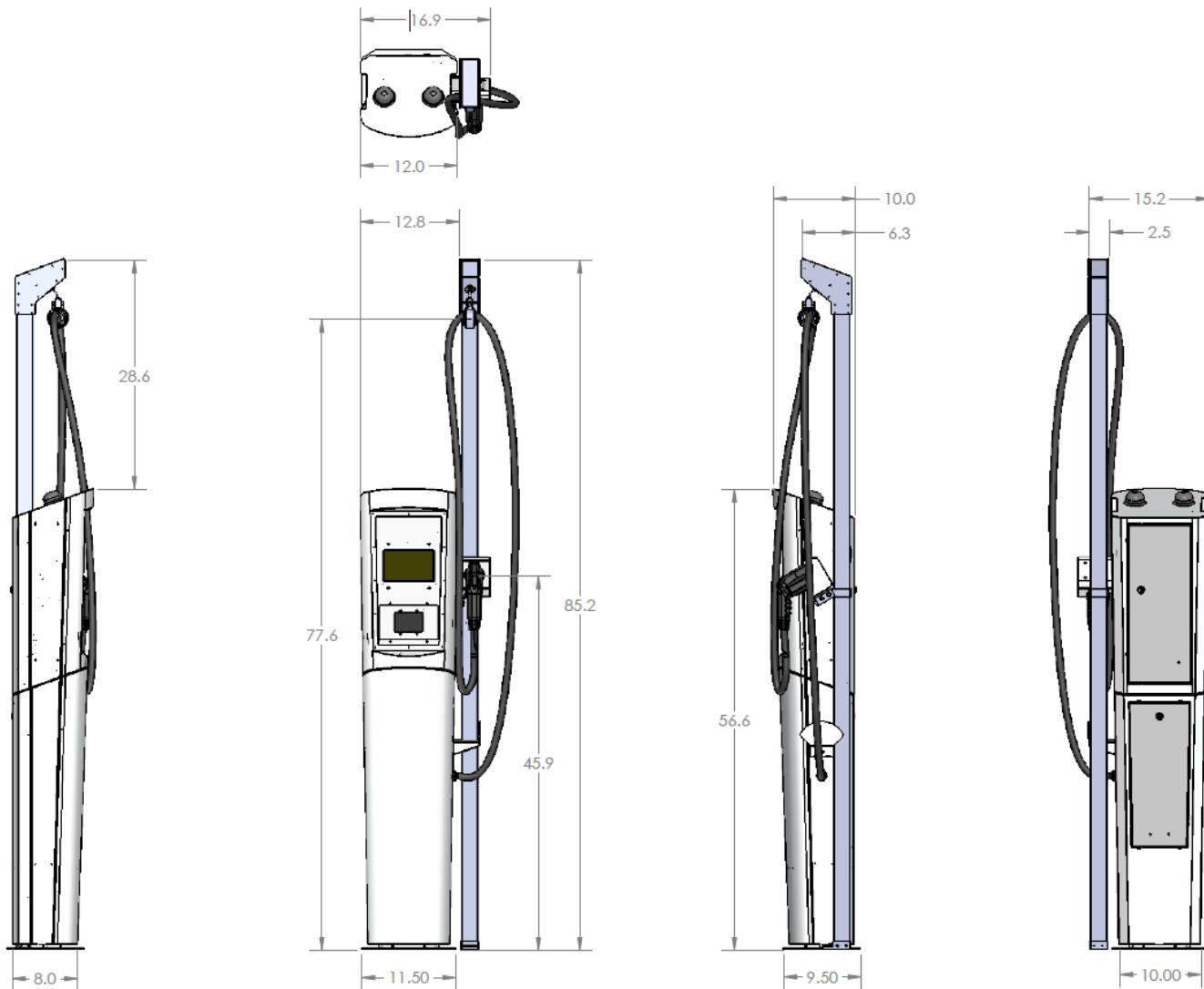
**Note:** A spacer is needed to provide the 3.13" clearance from wall.



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**INSTALLATION**

**Single – Pedestal Charger Installation Drawing**



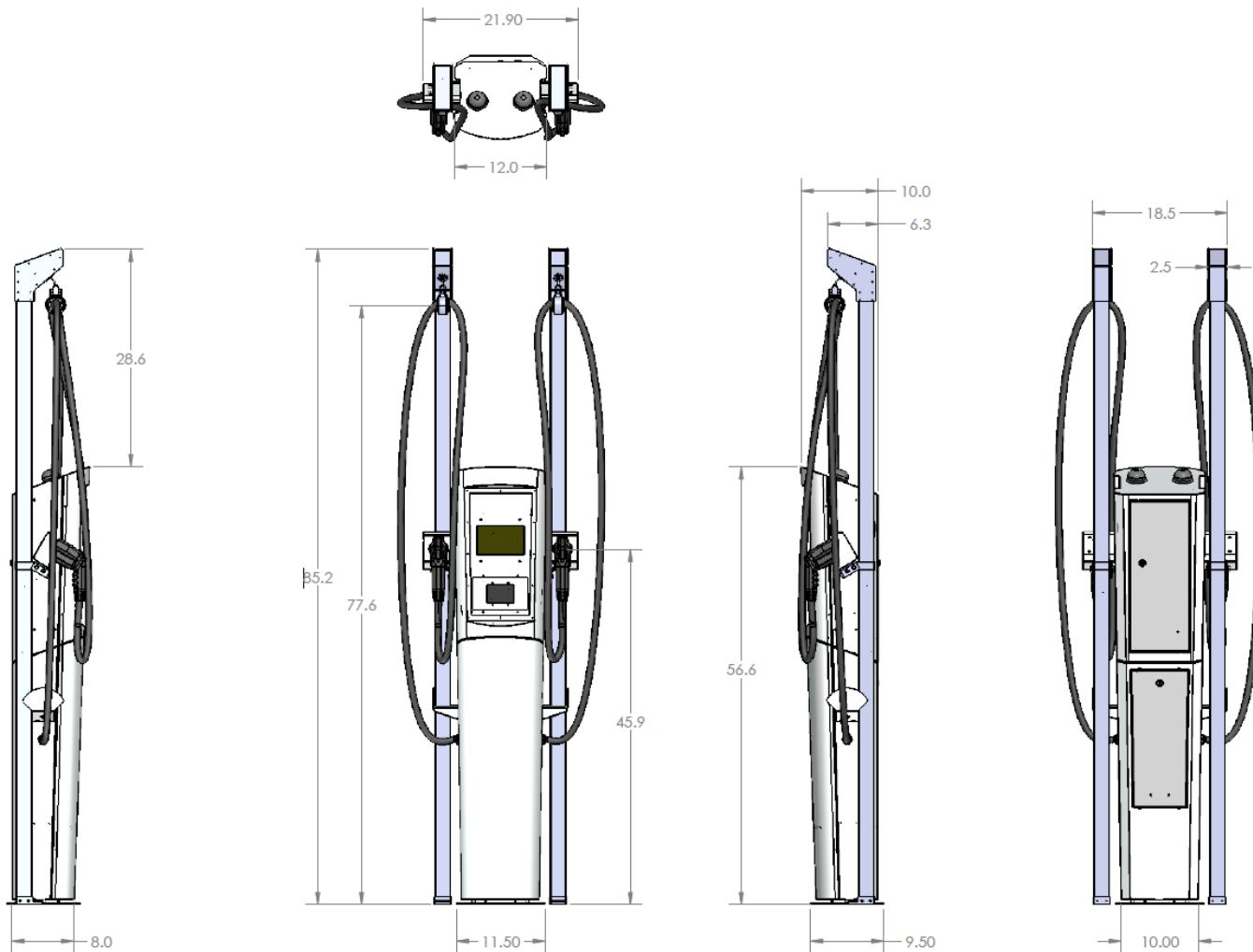
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**INSTALLATION**

**Dual – Pedestal Charger Installation Drawing**



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## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

### 6.1.2. Single or Dual Wall Mount Charger Mounting

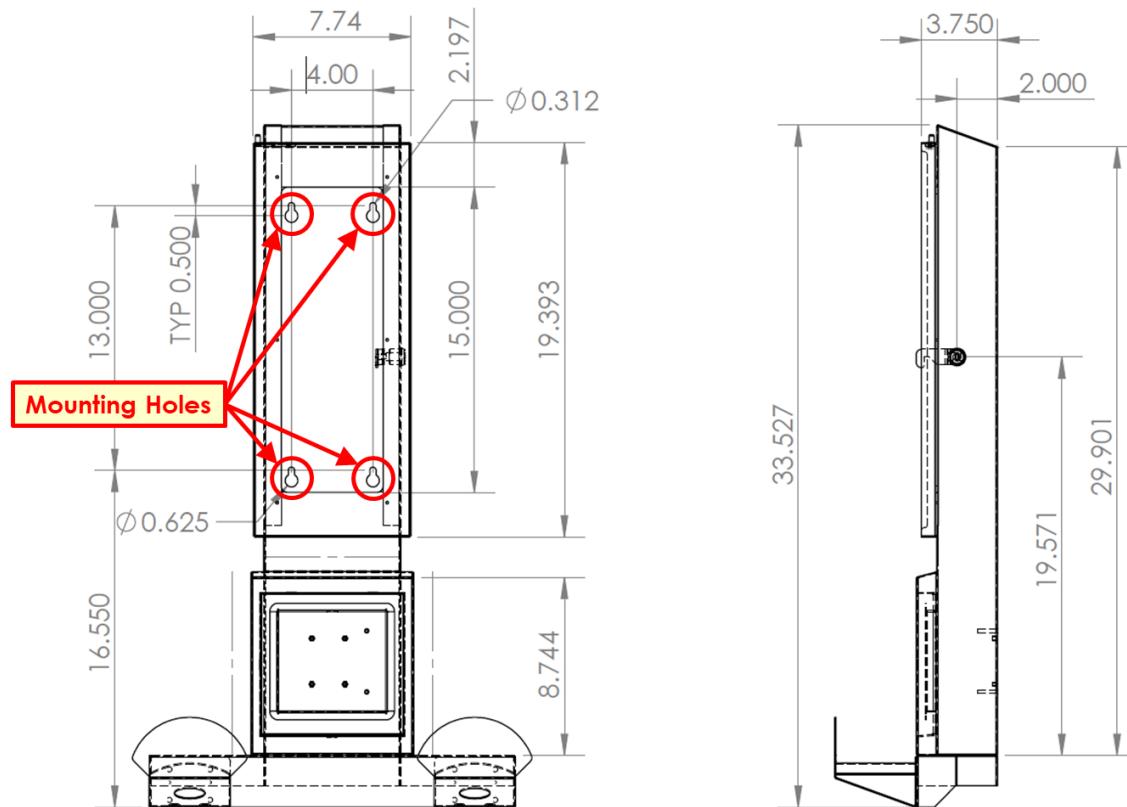


#### WARNING

**Make sure to provide adequate structural strength for this charger to prevent any serious personal injury or damage to equipment. It is the responsibility of the installer to ensure that the structure to where this charger is mounted can support five (5) times the combined weight of the entire charger unit.**

Mounting procedures for Single or Dual Wall Mount Charger are outlined as follows:

1. Take out the charger from its packaging.
2. Using the key (shipped together on the same packaging), open the charger's door to expose the four (4) mounting holes.
3. Mount and secure the charger's rear hold bracket.

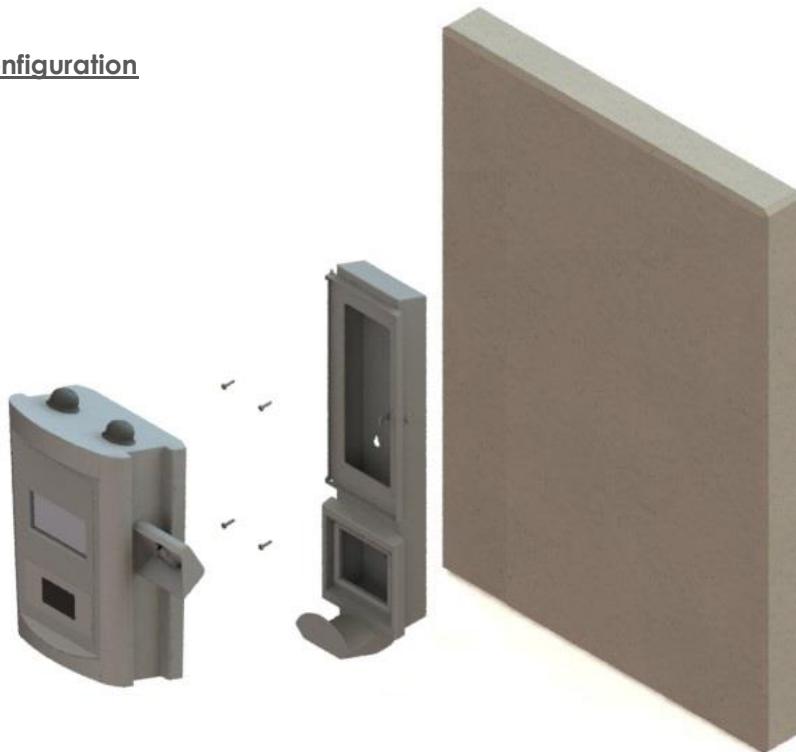


**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL**

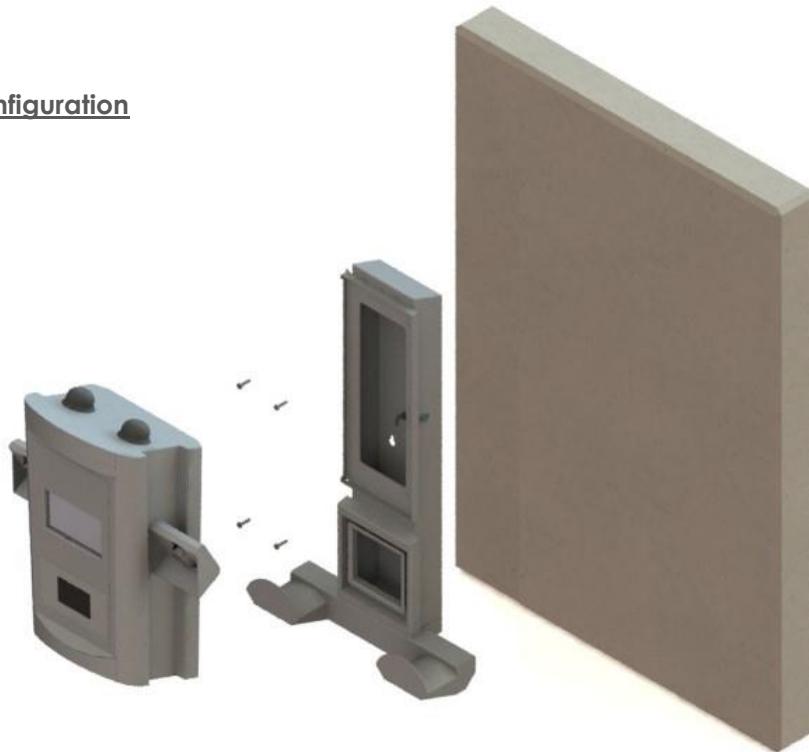
**INSTALLATION**

4. Anchor the charger to the wall using expansion bolts.

**SINGLE Port Configuration**



**DUAL Port Configuration**



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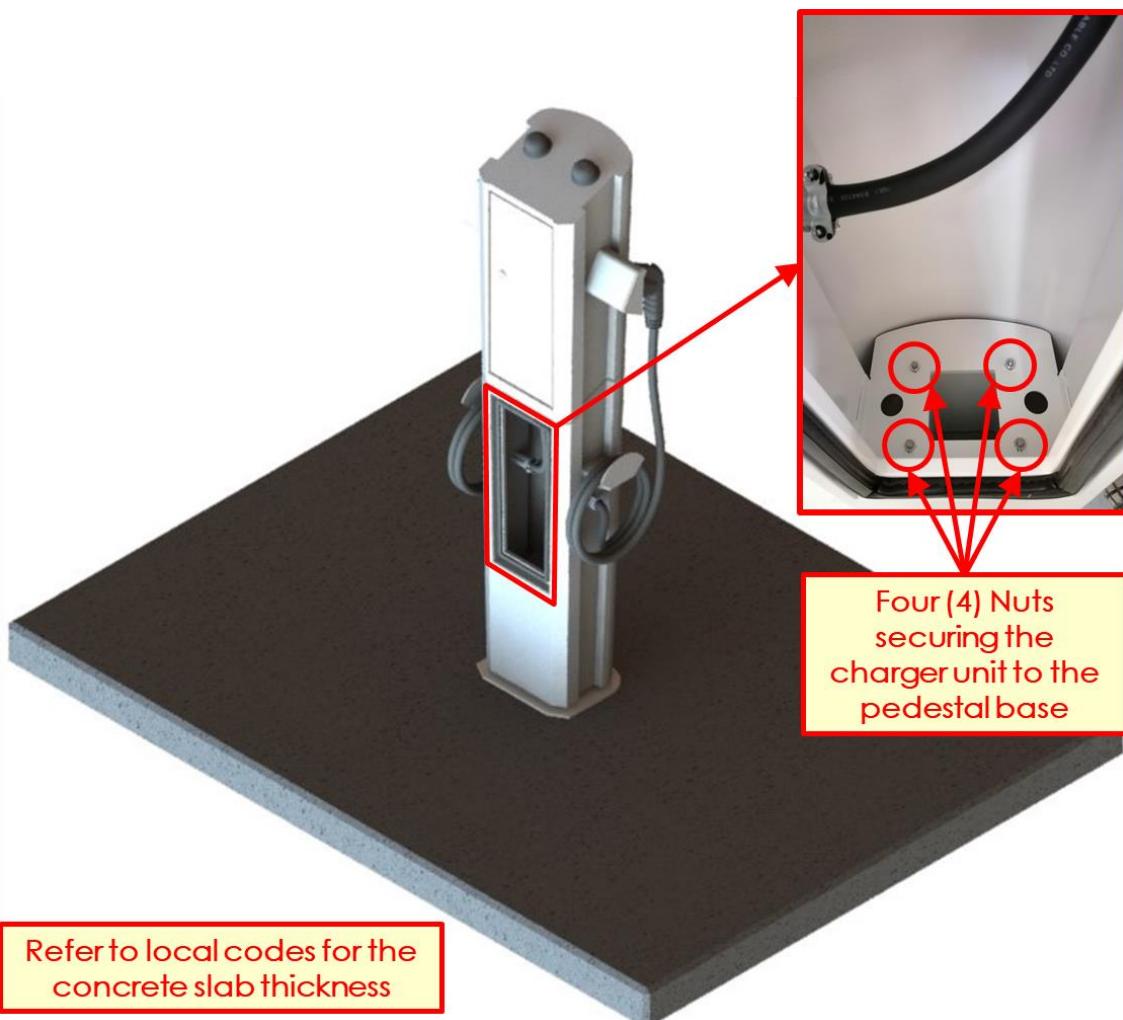
**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL**

**INSTALLATION**

**6.1.3. Single or Dual Pedestal Charger Mounting**

Mounting procedures for Single or Dual Pedestal Charger are outlined as follows:

1. Take out the charger from its packaging.
2. Using the key (shipped together on the same packaging), open the charger's rear door assembly to expose the four (4) nuts.

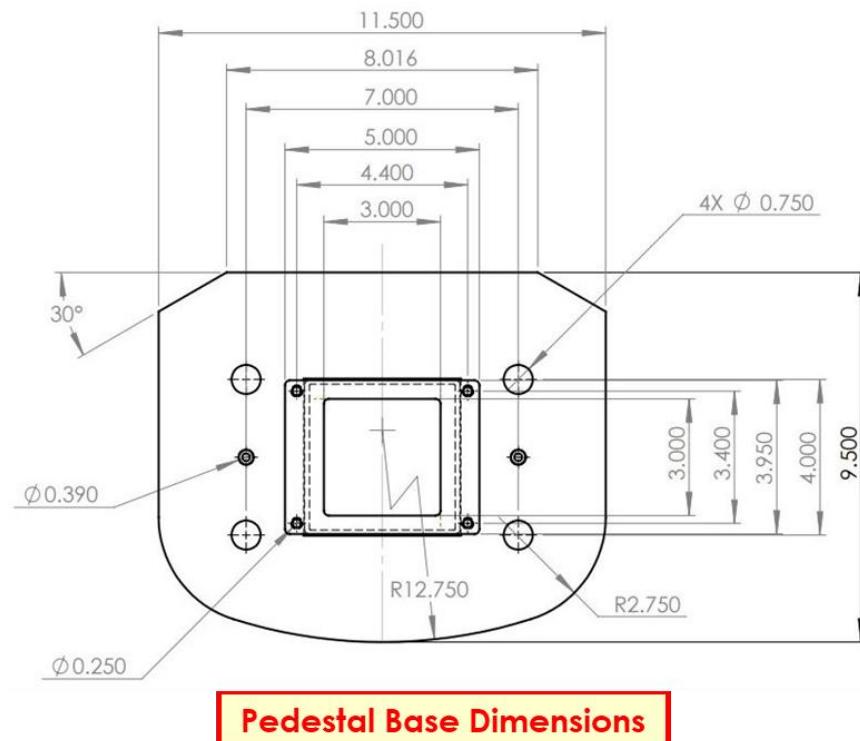
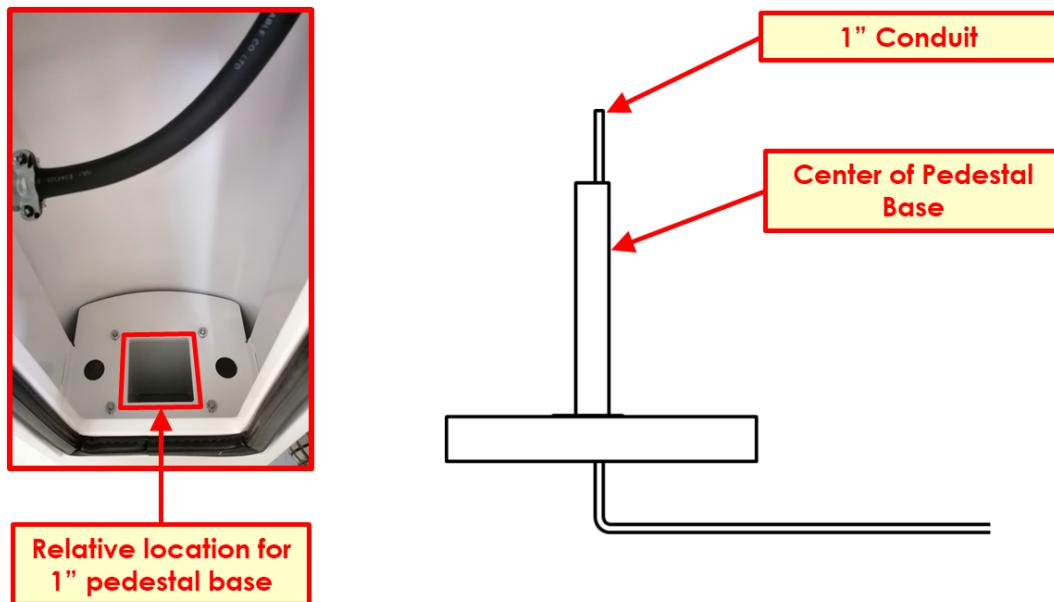


3. Release the pedestal from the charger unit by removing the four (4) nuts.

## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

### INSTALLATION

- Prior mounting the pedestal base to the concrete slab, make sure that AC powerlines are properly secured inside the conduit at the center of the pedestal base mounting location.



**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL**

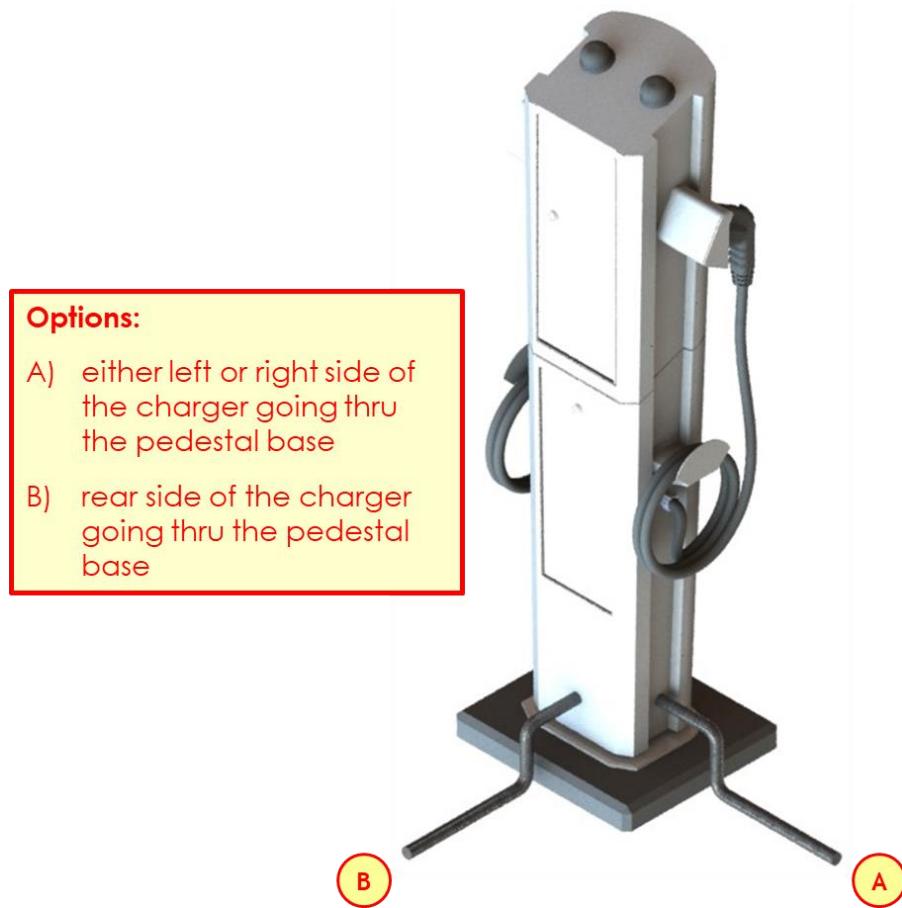
**INSTALLATION**

**Conduit Connection Options:**

The conduit carrying electrical service can also be installed above the concrete slab going thru:

- a) a hole drilled on either left or right side of the charger unit going thru the same side of the pedestal base going up to the input safety breaker.
- b) a hole drilled on the rear side of the charger unit going thru the same side of the pedestal base going up to the input safety breaker.

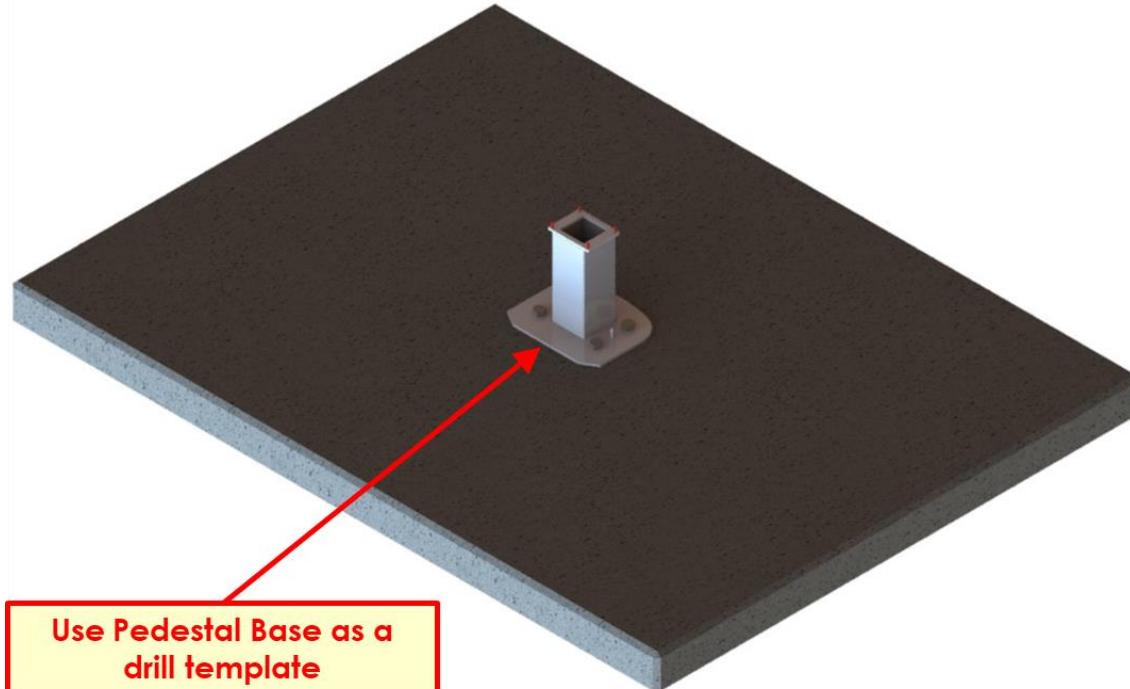
In either option above, please ensure that the cut surfaces (during drilling) are treated / recoated in order to prevent from rusting.



**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL**

**INSTALLATION**

- Once the pedestal is released from the charger unit, mount and secure the pedestal base to the concrete slab using four (4) concrete expansion bolts.



- Once the pedestal base is mounted and secured to the concrete slab, attach the charger unit to the pedestal base using the four (4) nuts previously removed in step 3.
- Fasten the four (4) 1/4-20 nuts at 53 in-lb.



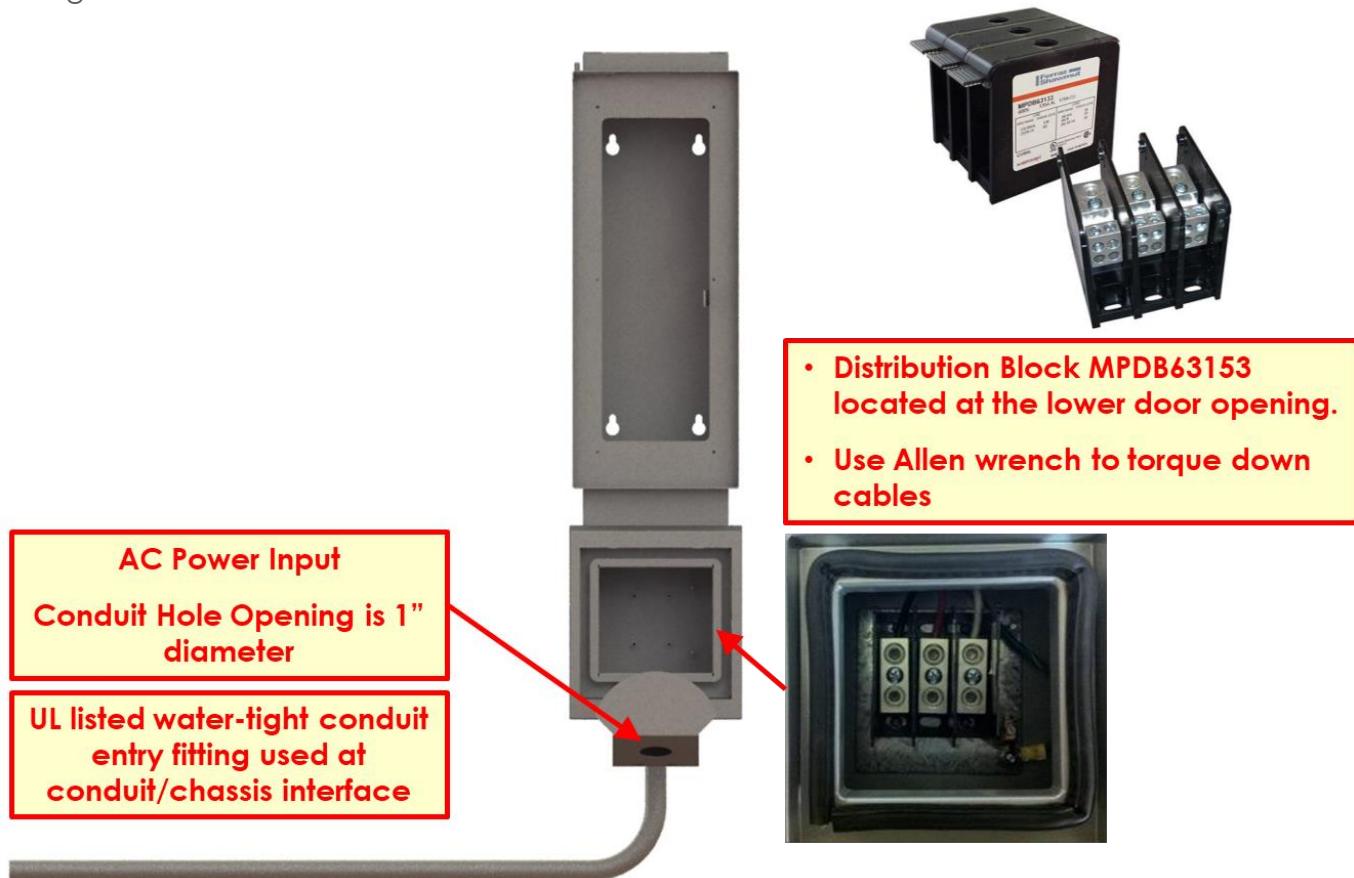
## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

### 6.2. Electrical Service Connection

#### Wall Mount Charger Electrical Connection

The unit is provisioned to receive an electrical power connection from the bottom as shown in the figure below.



MERSEN DISTRIBUTION BLOCK (MPDB63153)						
Primary			Secondary			
Wire Range	Opening per Pole	Torque (lb-in)	Wire Range	Opening per Pole	Torque (lb-in)	
2/0 – #6	1	120	2/0 – #6	1	120	
#8 – #14	1	50	#8 – #14	1	50	

## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

### Single / Dual System Electrical Connection

#### Single Sided Charger Connection

- Two (2) appropriately gauged hot leads (refer to local electrical code)
- One (1) appropriately gauged ground (green) lead
- Electrical conduit per all applicable state and federal regulations
- AC input power should be inserted through bottom of EVSE enclosure
- Electrical connections shall be made as specified in this section



#### NOTE

For the dual units, two separate line pairs need to be connected from independent service panel breakers of the appropriate rating. Each hot lead should measure 120VAC to ground.

#### Service Connection

Electrical Input AC Voltage	Single Port 208/240 VAC			Dual Port 208/240 VAC		
	Current	Input Power Connection	Service Panel Breaker	Current	Input Power Connection	Service Panel Breaker
Standard (recommend 10 – 8AWG)	30A	one 50A branch circuit	40A dual pole (non-GFCI type)	30A x 2	two independent 40A branch circuits	40A dual pole (non-GFCI type) x 2
Standard (recommend 8 – 6AWG)	40A	one 50A branch circuit	50A dual pole (non-GFCI type)	40A x 2	two independent 50A branch circuits	50A dual pole (non-GFCI type) x 2
Standard (recommend 6 – 3AWG)	70A	one 100A branch circuit	100A dual pole (non-GFCI type)	---	---	---
Service Panel GFCI	Do not provide external GFCI as it may conflict with internal GFCI (CCID) 5-wire (L1, L1, L2, L2, earth)					
Wiring Standard	3-wire (L1, L2, earth) For a 3-phase system, the 2 ports should be distributed between 2 different phases (e.g. L1 & L2, and L2 & L3)					

To reduce the risk of fire, connect only to a circuit provided with the appropriate maximum branch circuit overcurrent protection (40A, 50A, & 100A for 30A, 40A, and 70A output rating, respectively) in accordance with the ANSI/NFPA 70 National Electrical Code. On a dual-port charger, this circuit breaker is for each port.

## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

### Single Port Charger (30A/40A) – Pedestal

Connect L1 and L2 to the input safety breaker. BTCPower highly recommends crimp ferrule lugs to be used to make all electrical connection to the input safety breaker. In addition, a torque wrench should be used on the input breaker screw terminals. Set the wrench to a torque of 21.2 lb.in or 2.4 N.m. A pull test should be done on the wire connections to ensure proper connection.

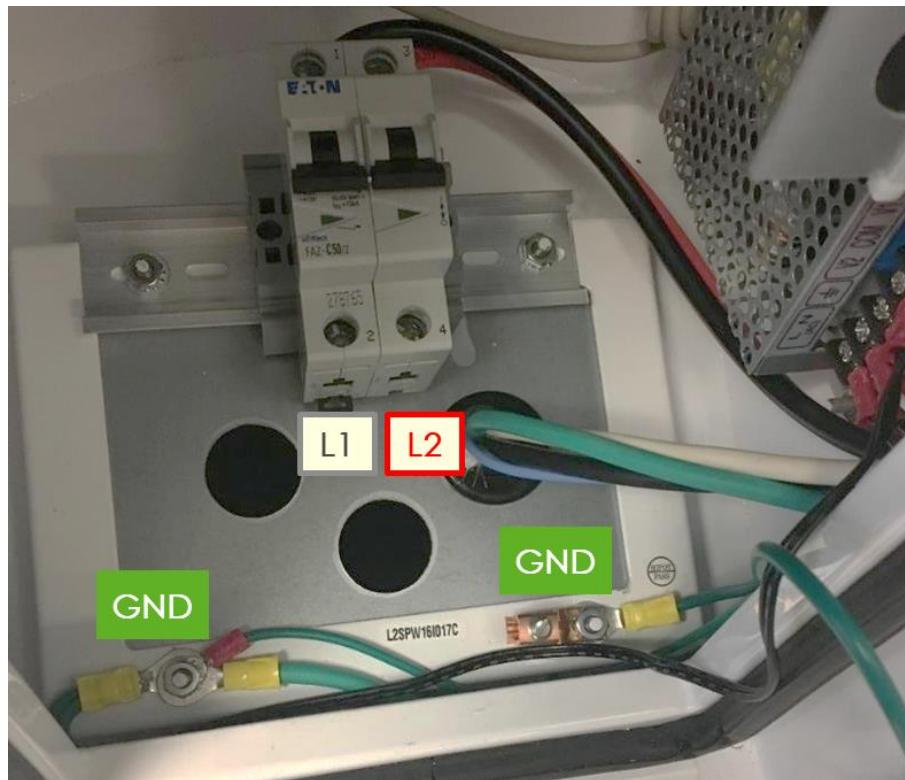
Charger	Eaton Breaker (FAZ-C50/2)	Wire Size	Torque Requirement
30A	10 – 8AWG (recommended)		21.2 lb.in
40A	8 – 6AWG (recommended)		(2.4 N.m)

\* Temperature rating of wires should be 60°C. Use Copper wires only.



#### NOTE

Appropriate wire size / gauge to be used will be determined by the installer in-charge.



## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

### Dual Port Charger (30A/40A) – Pedestal

Connect L1 and L2 on both charge ports to the input safety breaker. BTCPower highly recommends crimp ferrule lugs to be used to make all electrical connection to the input safety breaker. This requires the correct crimping tool. In addition, a torque wrench should be used on the input breaker screw terminals. Set the wrench to a torque of 2.4Nm or 21.2 lb.in. A pull test should be done on the wire connections to ensure proper connection.

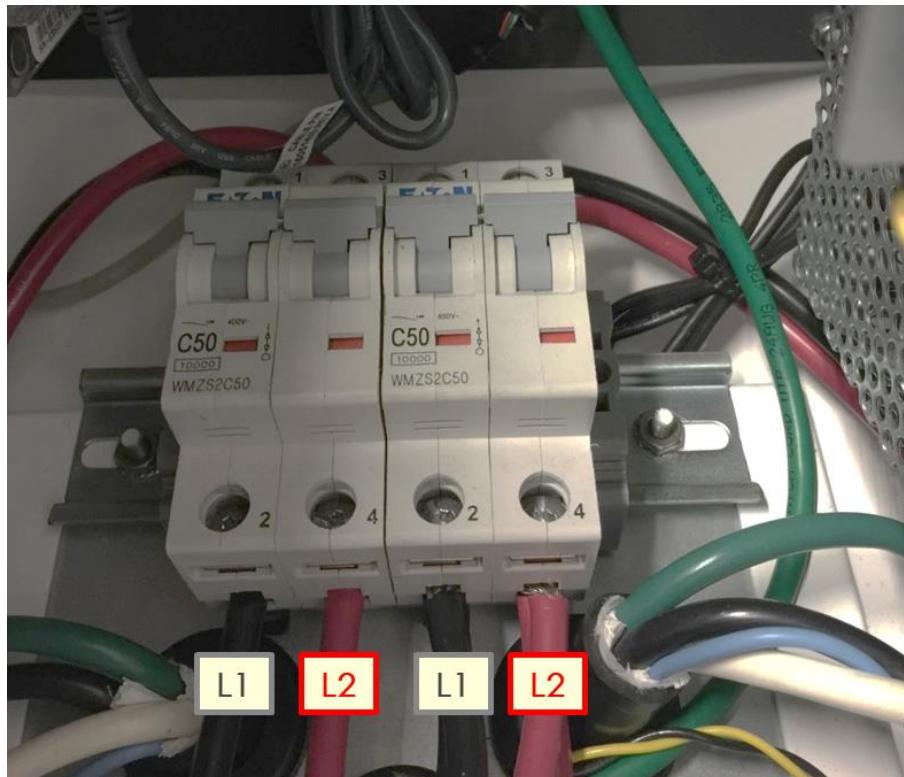
Charger	Eaton Breaker (FAZ-C50/2)	Wire Size	Torque Requirement
30A	10 – 8AWG (recommended)		21.2 lb.in
40A	8 – 6AWG (recommended)		(2.4 N.m)

\* Temperature rating of wires should be 60°C. Use Copper wires only.



#### NOTE

Appropriate wire size / gauge to be used will be determined by the installer in-charge.



## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

### Single Port Charger (70A) – Pedestal

Connect L1 and L2 to the input safety breaker. BTCPower highly recommends crimp ferrule lugs to be used to make all electrical connection to the input safety breaker. In addition, a torque wrench should be used on the input breaker screw terminals. Set the wrench to a torque of 80lb.in or 9 N.m. A pull test should be done on the wire connections to ensure proper connection.

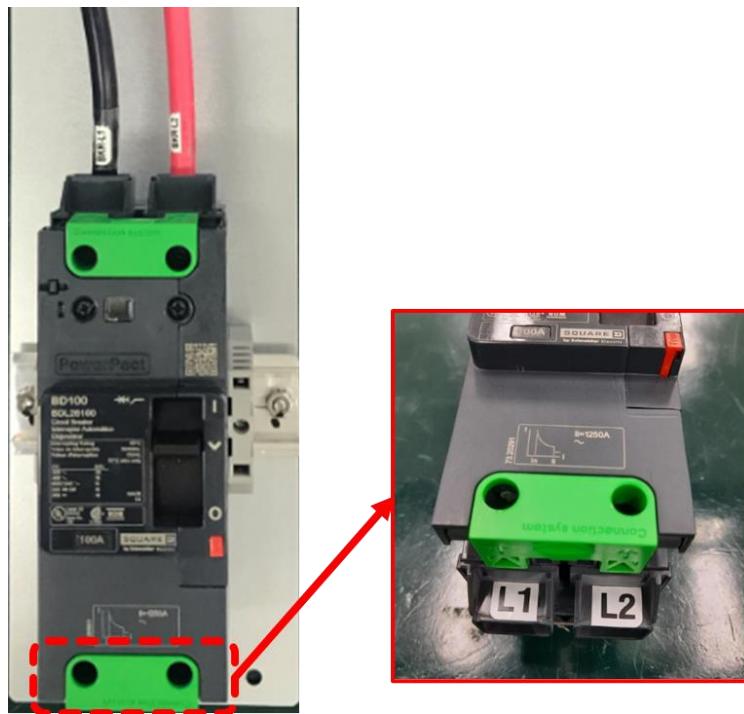
Charger	SquareD Breaker (BDL26100)	Torque Requirement
70A	Wire Size Range	
70A	6 – 3 AWG (recommended)	80 lb.in (9 N.m)

\* Temperature rating of wires should be 60°C for 3AWG and 90°C for 6AWG. Use Copper wires only.



#### NOTE

Appropriate wire size / gauge to be used will be determined by the installer in-charge.



## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

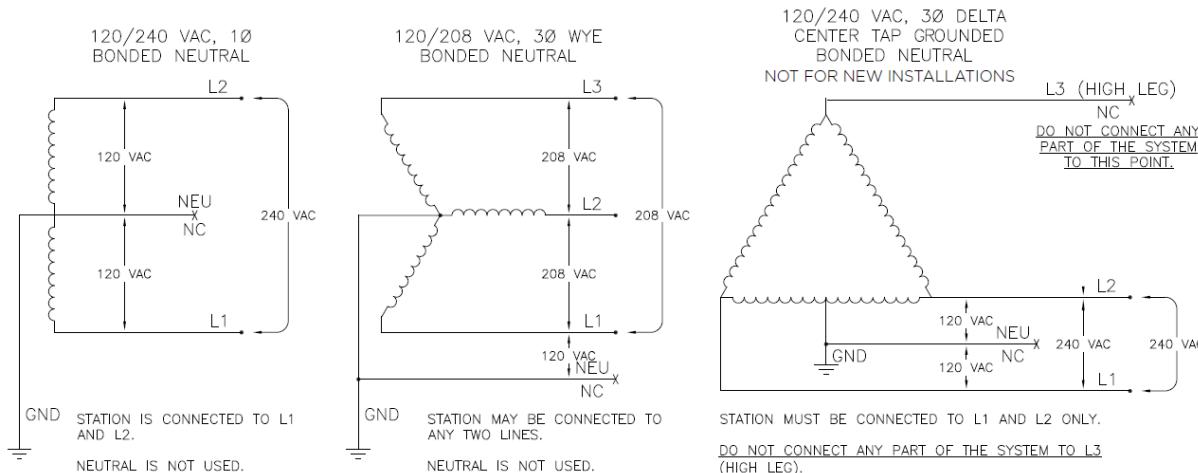
# INSTALLATION

### Grounding Instructions



Improper connection of the equipment-grounding conductor may result in a risk of electric shock. Check with a qualified electrical personnel or service person if you are in doubt as to whether the unit is properly grounded.

The **AC Level 2 Charger** must be connected to a grounded, metal, permanent wiring system, or an equipment-grounding conductor is to be run with the circuit conductors and connected to the equipment grounding terminal.



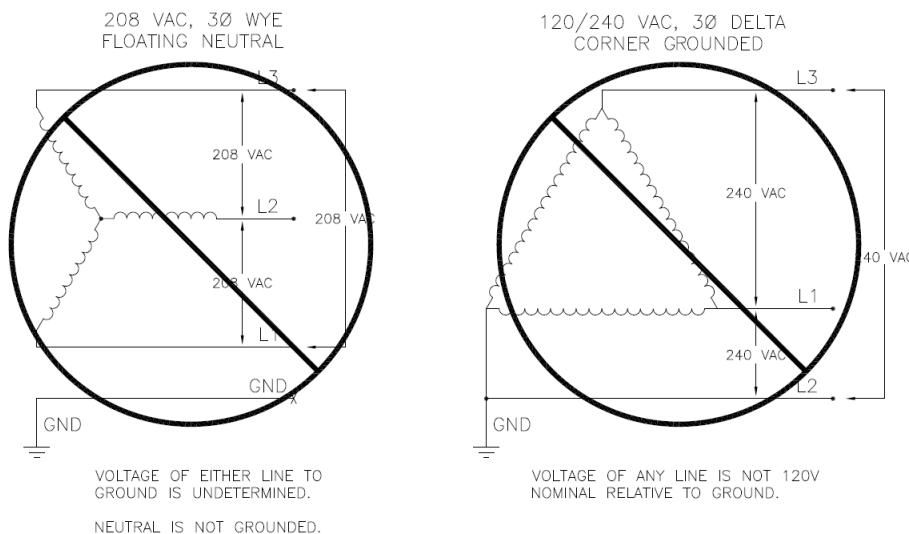
## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

### Do not connect to these systems:

Do not connect the charger to the following types of power sources:

- 120/208 VAC 3 phase wye, ungrounded
- 120/240 VAC 3 phase delta, corner-grounded
- Any system where the center point of the AC power source is not grounded



## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

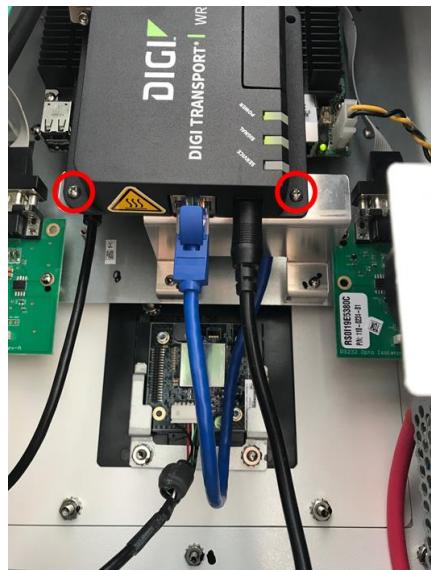
### 6.3. Wi-Fi Kit Mounting Procedure

Refer to the following instructions in mounting the Wi-Fi Module:

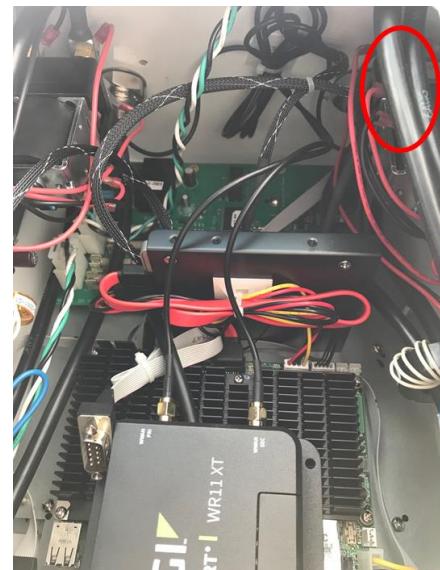
1. Remove the modem from the unit.
  - 1.1. Disconnect the antennas, power cord, and Ethernet cable from the cellular modem as shown in **Figure 1.1**.
  - 1.2. Remove the two (2) screws holding the modem to the mounting bracket as shown in **Figure 1.2**.
  - 1.3. Remove the right antenna only by removing the nut holding it in place as shown in **Figure 1.3**.



**Figure 1.1**



**Figure 1.2**



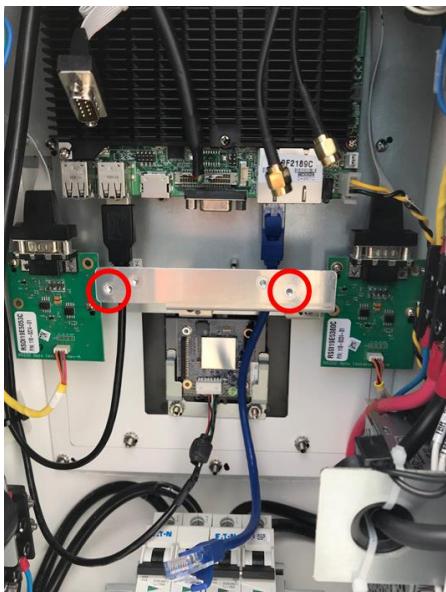
**Figure 1.3**

2. Use the mounting holes as shown in Figure 2 to mount the aluminum bracket for Wi-Fi module with power supply.
3. Mount the power supply
  - 3.1. Mount the power supply bracket (with zip ties on it) to the left side of the aluminum bracket as shown in **Figure 3.1**.
  - 3.2. Secure the power supply bracket with two (2) mounting screws as shown in **Figure 3.2**.

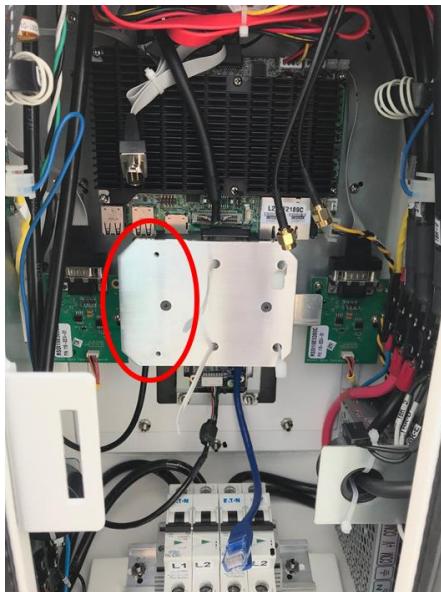
## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

3.3. Attach the power supply (shown in **Figure 3.3a**) to the bracket by sliding onto the bracket as it is pushed down as shown in **Figure 3.3b**.



**Figure 2**



**Figure 3.1**



**Figure 3.2**



**Figure 3.3a**



**Figure 3.3b**

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## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

### 4. Install the Wi-Fi Module

- 4.1. Install the Wi-Fi module and secure it to the bracket with zip ties as shown in **Figure 4.1**.
- 4.2. Connect one end of the blue Ethernet cable to the power supply (shown in **Figure 4.2a**) and the other end going to the left PC Ethernet port (shown in **Figure 4.2b**).



**Figure 4.1**



**Figure 4.2a**



**Figure 4.2b**

- 4.3. Connect the white Ethernet cable from the bottom of the Wi-Fi module to the power supply as shown in **Figure 4.3**.
- 4.4. Connect the power supply wires from the bottom of the unit to the input power terminals of the terminal block located at the right side of the charger. See **Figure 4.4**.
- 4.5. Connect the ground wire to any terminal block mounting chassis ground as shown in **Figure 4.5**.

## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION



Figure 4.3

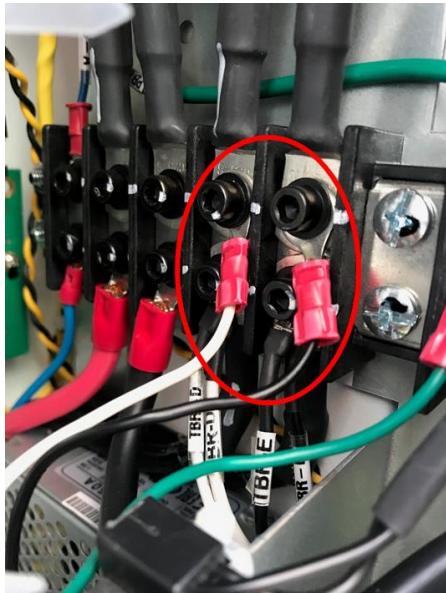


Figure 4.4



Figure 4.5

- 4.6. Connect one end of the Wi-Fi antenna cable on the tip of Wi-Fi module and the other end to the Wi-Fi antenna attached on the right side where one of the cellular modem antennas was previously installed. See **Figures 4.6, 4.7, and 4.8**.

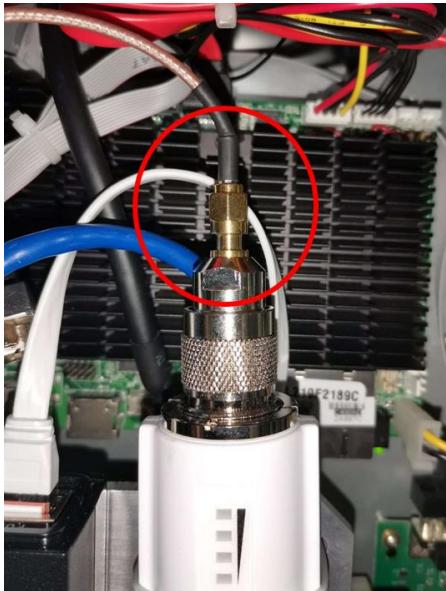


Figure 4.6



Figure 4.7



Figure 4.8

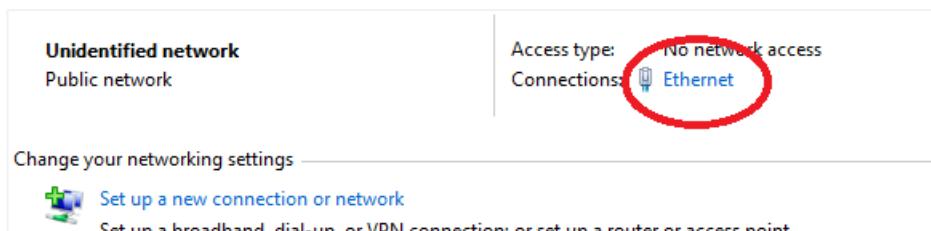
## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

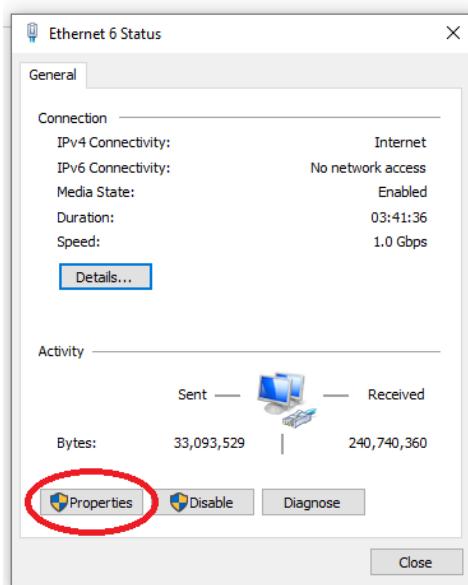
### 6.4. Wi-Fi Network Connection

#### Configuring PC to connect to Wireless Access Point

1. Disconnect the Ethernet cable from Wi-Fi Wireless Access Point POE/power supply.
2. Connect a patch cord ethernet cable from Wi Fi Wireless Access Point POE/Power supply to the Ethernet port on the PC.
3. On the laptop, open File Explorer. This can be accomplished by left clicking on toolbar icon or entering “File Explorer” in the search bar.
4. Enter “Control Panel\All Control Panel Items\Network and Sharing Center” into the address bar in File explorer.
5. In the “Network and Sharing Center” page, left click on the “Ethernet” link as circled in red below:



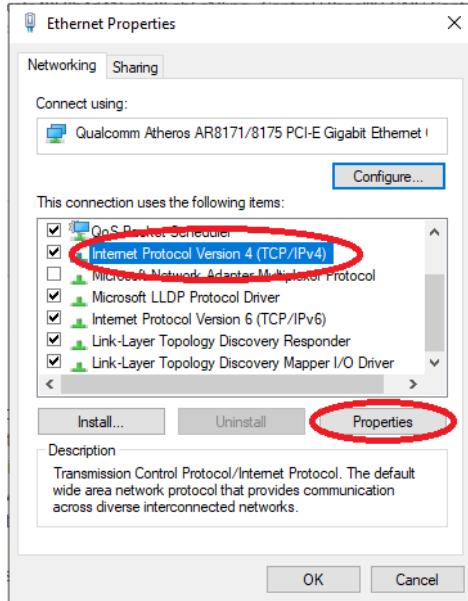
6. In the “Ethernet Status” window, left click on the “Properties” button as shown below (circled in red):



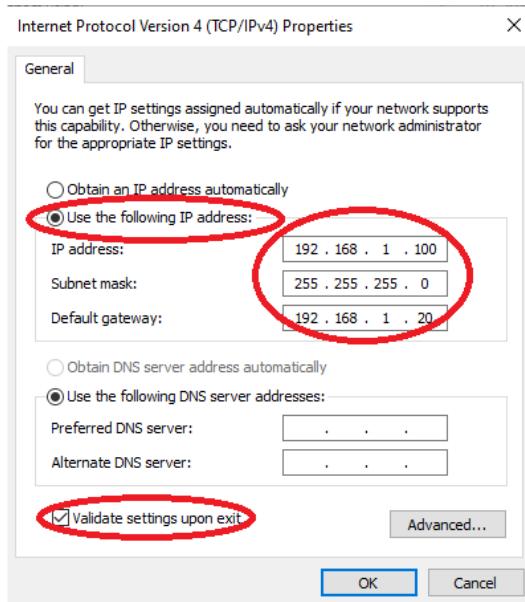
## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

7. In the “Ethernet Properties” window, click on the “Internet Protocol Version 4 (TCP/IPv4) connection and then “Properties” button as shown below (circled in red):



8. In the “Internet Protocol Version 4 (TCP/IPv4) Properties” window, select the “Use the following IP address” option, enter the IP address, Subnet mask, and Default gateway, and select “Validate settings upon exit as shown below (circled in red):



9. Click “OK”

## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

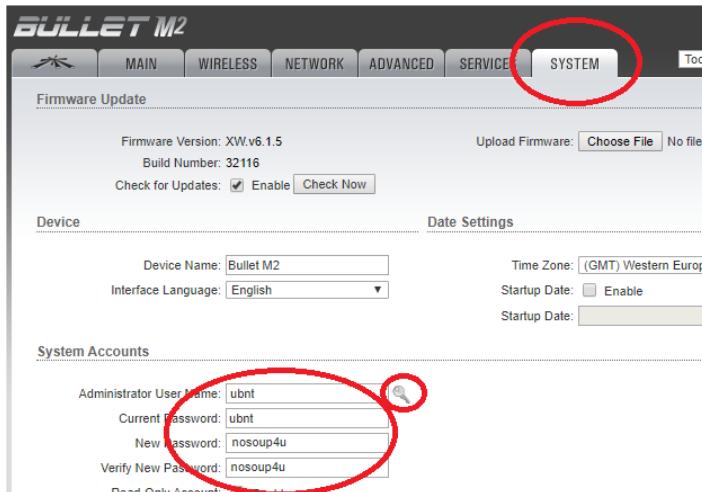
10. Click on the "Close" button on the "Ethernet Properties" window.
11. A pop-up banner may appear showing connection to a network.

### Connecting PC to Wi-Fi Wireless Access Point

1. Launch a browser on the PC (Chrome is recommended)
2. In the address field, type: "https://192.168.1.20" and press "enter."
3. If a warning screen appears, click on links needed to allow access to the management page (e.g. click on "Advanced" and then "Proceed to 192.168.1.20 (unsafe)").
4. When the login page appears, enter "ubnt" in both the password and username fields.
5. Click the box to accept "TERMS OF USE and LICENSE AGREEMENT."
6. Left click the "Login" button in lower right area below Terms of Use.

### Configuring Wi-Fi Wireless Access Point Username/Password

1. Once the Wi Fi Wireless Access Point management page opens, click on the "SYSTEM" tab as shown below (circled in red):
2. Click on magnifier icon as shown below (circled in red):
3. To change password, for "Current Password", use "ubnt"; for New Password, use "nosoup4u" as shown below (circled in red):



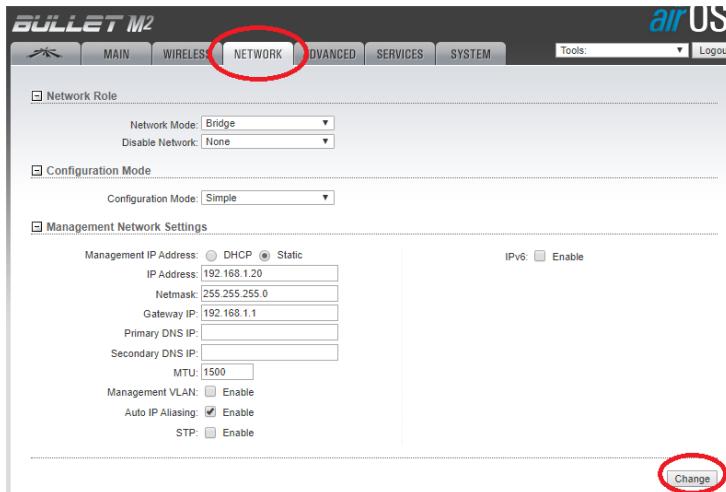
4. Click "Change" button below "Miscellaneous" section (on the right).
5. On top, a blue banner will appear allowing you to select the "Apply" button.

## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

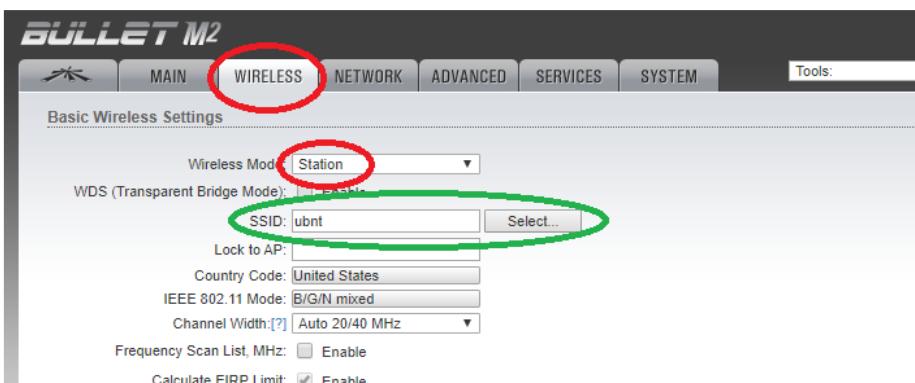
# INSTALLATION

### Configuring Wi-Fi Wireless Access Point Operation Mode

1. After a moment, select the “Network” tab as shown below (circled in red):
2. Assure that the settings are as shown in the screen below.
3. Select the “Change” in lower right corner of the window (circled in red):



4. On top, a blue banner will appear allowing you to select “Apply”.
5. Select the “Wireless” tab as shown below (circled in red):
6. Assure that the Wireless Mode is set to “Station” as shown below (circled in red):



7. Select “Change” button in lower right corner of the window as applicable.

### Configuring Wi-Fi Wireless Access Point Select Network

1. Remaining in the “Wireless” tab page select the “Select” button for the SSID as shown above (circled in green).
2. Choose the appropriate network SSID by left clicking on the button to the left of the identified network as shown in example below (circled in red). Assure Signal is above -70dBm and is more than 15 dB above noise (yellow):

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# AC Level 2 Charger

## INSTALLATION AND USER'S MANUAL

# INSTALLATION

3. Left click on "Select" as shown below (circled in green):

**Site Survey**

**Scanned Frequencies:**  
2.412GHz 2.414GHz 2.417GHz 2.419GHz 2.422GHz 2.424GHz 2.427GHz 2.429GHz 2.432GHz 2.434GHz 2.437GHz 2.439GHz 2.442GHz 2.444GHz  
2.447GHz 2.449GHz 2.452GHz 2.454GHz 2.457GHz 2.459GHz 2.462GHz

MAC Address	SSID	Device Name	Radio Mode	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
60:38:E0:7B:9A:D0	YC-WIFI		802.11n	WPA2	-60 / -89	2.422 / 3
3E:52:82:87:1A:37	DIRECT-37-HP OfficeJet Pro 7720		802.11n	WPA2	-50 / -89	2.437 / 6
FC:15:B4:D3:1E:DA	HP-Print-DA-ENVY 4500 series		802.11g	WPA2	-81 / -96	2.437 / 6
9A:E7:F4:B1:AC:B7	DIRECT-B7-HP OfficeJet Pro 7740		802.11n	WPA2	-79 / -88	2.442 / 7
10:62:E5:71:C1:5D	DIRECT-5C-HP OfficeJet 6950		802.11n	WPA2	-75 / -88	2.442 / 7
<b>BC:3B:AD:8A:E9:C0</b>	<b>NewBTCPowerwifi</b>		<b>802.11n</b>	<b>WPA2</b>	<b>-64 / -96</b>	<b>2.462 / 11</b>
F8:E7:1E:2C:92:C8	CableWiFi		802.11n	NONE	-60 / -89	2.462 / 11
F8:E7:1E:AC:92:C8	SpectrumWiFi		802.11n	NONE	-91 / -96	2.462 / 11

Selectable SSID's must be visible and have compatible channel bandwidth and security settings.

Lock to AP

4. Once the selection is accepted, the window will move to background (but may still be opened) returning screen to the "Wireless" tab page.  
 5. Enter the password provided at site, for the selected network SSID, and left click "Change" as shown in the example screen below (circled in red):

**BULLET M2** **airOS**

**Basic Wireless Settings**

Wireless Mode: Station  
WDS (Transparent Bridge Mode):  Enable  
SSID: NewBTCPowerwifi   
Lock to AP   
Country Code: United States  
IEEE 802.11 Mode: B/G/N mixed  
Channel Width: Auto 20/40 MHz  
Frequency Scan List, MHz:  Enable  
Calculate EIRP Limit:  Enable  
Antenna Gain: 0 dB  
Cable Loss: 0 dB  
Output Power: 25 dBm  
Data Rate Module: Default  
Max TX Rate, Mbps: MCS 7 - 65/72.2 [135/15]  Auto  
Wireless Security

Security: WPA2-AES  
WPA Authentication: PSK  
WPA Preshared Key: **(password)**  Show

6. Once the "Change" is accepted, the window will display a banner along the top of the screen as shown below in the example screen shot (circled in red):

**BULLET M2** **airOS**

**Basic Wireless Settings**

Configuration contains changes. Apply these changes?

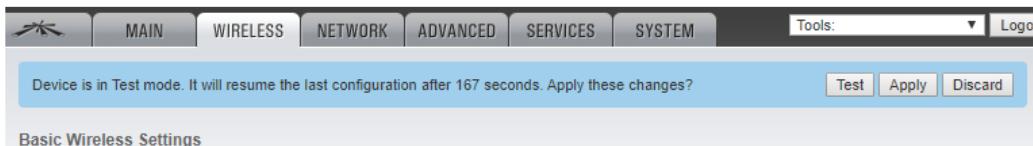
Test  Discard

Wireless Mode: Station  
WDS (Transparent Bridge Mode):  Enable  
SSID: NewBTCPowerwifi

## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

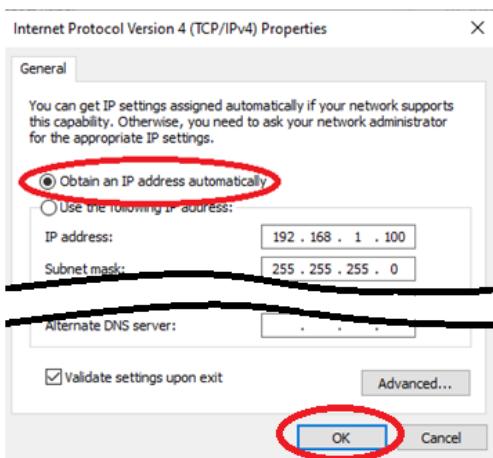
7. Initially select the "Test" button (circled in orange on the previous page)
8. The banner will show that the settings are temporarily being applied and will resort back to previous setting after a shown time period as seen below:



9. The succeeding set of procedures are for testing network internet connection. Note that you will have about three (3) minutes to complete these next procedures.

### Testing Internet Connectivity/Returning PC to DHCP

1. After initiating test mode on previous page, test for Internet connection by doing search in browser. If the connected WAN network is using the 192.168.1.xxx network schema, skip to next page of these instructions.
2. Repeat instructions on first three pages of the "Configuring PC to connect to Wireless Access Point" of this document. In the "Internet Protocol Version 4 (TCP/IPv4) Properties" window.
3. Select the "Obtain an IP address automatically" option as shown below (circled in red):
4. Click "OK" (circled in red):



### Testing Internet Connectivity/Returning PC to Static IP

1. If there is connection to the Internet, return the PC IP address to a static address as described under "Configuring PC to connect to Wireless Access Point" on the previous pages.
2. Click "Apply" (green circle in top screen shown on the previous page), otherwise select "Discard" or wait until timer expires.

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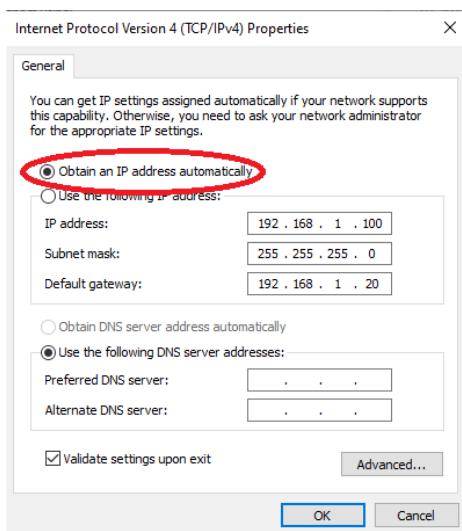
## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# INSTALLATION

3. If there is no Internet connection, verify settings set previously and repeat steps under "Configuring Wi-Fi Wireless Access Point Select Network" and "Testing Internet Connectivity/Returning PC to DHCP".

### Returning PC to DHCP

1. Once Internet connection is verified and settings are set, repeat instructions number 1 to 6 of the " Configuring PC to connect to Wireless Access Point " procedure.
2. In the "Internet Protocol Version 4 (TCP/IPv4) Properties" window, select the "Obtain an IP address automatically" option as shown below (circled in red):
3. Click "OK"



4. Disconnect the Ethernet patch cable from the POE/power supply and reconnect the Ethernet cable from the charger PC to the Ethernet port on the POE/power supply.

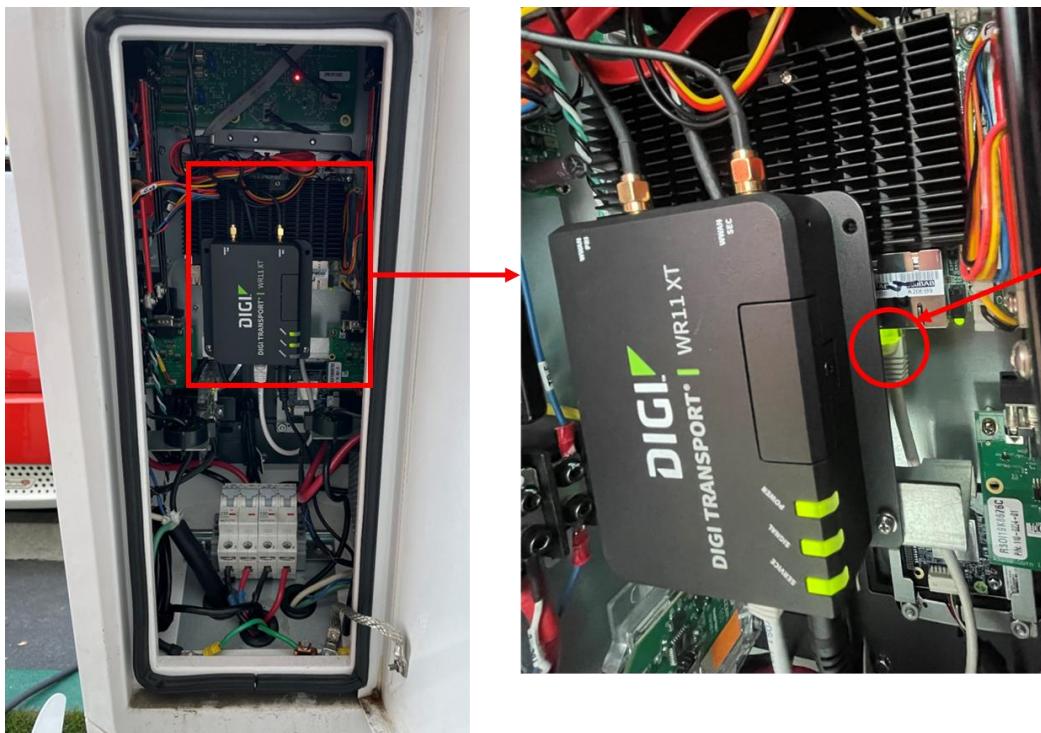


**NOTE**

All BTCPower EVSEs should be connected to a dedicated wireless router.

**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL****INSTALLATION****6.5. Ethernet Port Location from Modem**

The RJ45 cable from the modem should be connected to the left-side ethernet port of the PC.



**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL**

**VERIFICATION AND INSPECTION**

**7. Verification and Inspection**

**Commissioning**

Prior and during system start-up, perform verification and inspection on the charger unit using the **AC Level 2 Charger Commissioning Checklist** which was provided together with this manual.

All instructions listed in the commissioning checklist are considered mandatory and must be carried out by the contractor in-charge of the commissioning. Required information shall be filled-in as well.

For any issues, concerns, or questions during commissioning, please email to [dispatch@btcpower.com](mailto:dispatch@btcpower.com) or call **1-855-901-1558**.

After successful commissioning, email the completed commissioning checklist to [dispatch@btcpower.com](mailto:dispatch@btcpower.com).

# AC Level 2 Charger

## INSTALLATION AND USER'S MANUAL

# OPERATION

### 8. Operation

#### 8.1. System Power Up and Testing



**DANGER**

The charger must NOT be started or put into use without having been commissioned by a fully trained and authorized personnel.



**WARNING**

**WARNING AGAINST TAMPERING, and PLEASE REFER TO SAFETY WARNINGS PERTAINING TO A RISK OF FIRE OR ELECTRIC SHOCK FROM SECTION 6.**

#### Front Display Panel

The front panel display allows the user to know the status of the charger and if charging is taking place.

#### Switching ON

Once the charger has been installed by a qualified electrician, switch ON the breaker inside the charger then the main panel breaker. The system and the display should turn ON.

#### Free Vending Mode

Remove the charging connector from its holder on the front of the charging station. Open the J1772 plug cover on your vehicle (refer to the vehicles owner's manual). Plug the J1772 plug into the vehicle's charge port.

Upon insertion, push down on the handle to lock it into place. Normally, the vehicle will immediately request a charge and the contactor inside the charger can be heard closing. The display will show ready for charge followed by charging.

**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL****OPERATION**

To remove the connector from the vehicle, depress the button in the middle of the handle to release the connector.

Place the charge connector back into the connector provided on the charge station.

**Access Control Mode**

- RFID
- Credit Card Payment
- Phone Application

**1.1. Screen Scenarios****READY FOR CAR TO PLUG IN****BTCPower**

Asset ID: BTC5678

**READY TO CHARGE****READY TO CHARGE****Connect Vehicle****Connect Vehicle****SCAN RFID or USE APP****BTCPower**

Asset ID: BTC5678

**PAYMENT REQUIRED****READY TO CHARGE****Scan RFID Card or Use App****Connect Vehicle****ID: BTC5678**

AC Level 2 Charger  
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OPERATION

RFID INVALID

**BTCPower**

Asset ID: BTC5678

PAYMENT REQUIRED

READY TO CHARGE

RFID Card Invalid. Please Try Again.

Connect Vehicle

PAYMENT TIMER EXCEEDED

**BTCPower**

Asset ID: BTC5678

RECONNECT VEHICLE

READY TO CHARGE

Reconnect Vehicle

Connect Vehicle

AUTHORIZING PAYMENT

**BTCPower**

Asset ID: BTC5678

AUTHORIZING...

READY TO CHARGE

Processing...

Connect Vehicle

**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL**

# OPERATION

## CAR CHARGING

**BTCPower**

Asset ID: BTC5678

**CHARGING...**

**READY TO CHARGE**

<b>Energy</b>	<b>0.01</b>	<b>kWh</b>	<b>Connect Vehicle</b>
<b>Charger Voltage</b>	<b>241.58</b>	<b>VAC</b>	
<b>Charger Current</b>	<b>15</b>	<b>A</b>	

## CHARGING COMPLETED

**BTCPower**

Asset ID: BTC5678

**CHARGING COMPLETED**

**READY TO CHARGE**

**Please Unplug Charger and  
Return to Holder**

**Connect Vehicle**

## CAR UNPLUGGED

**BTCPower**

Asset ID: BTC5678

**CHARGING SUMMARY**

**READY TO CHARGE**

**Plugged In Time: 4h 20m 14s**

**Connect Vehicle**

**Charge Time: 3h 28m 2s**

**Energy: 28.8 kWh**

AC Level 2 Charger  
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## OPERATION

### INTERNET DOWN

**BTCPower**

Asset ID: BTC5678

NETWORK DOWN

NETWORK DOWN

Please Contact Customer  
Support.

Please Contact Customer  
Support.

### ERROR SCREEN WITH ERROR CODE

**BTCPower**

Asset ID: BTC5678

ERROR0

READY TO CHARGE

Please Call Customer Support.

Connect Vehicle

**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL****OPERATION****8.2. Troubleshooting****Charging Does Not Start**

In the event of a problem, charging will stop, and an error message will appear on the display panel. When this happens, perform the following steps before calling your field service representative.

1. Remove the charging connector from the vehicle socket. The error message on the screen may go off. Plug the connector back into the socket and check if charging begins normally. If charging does not start, then call customer service.
2. If error code appears on screen and persists after removing the connector, consider calling the field service representative to investigate the issue. The user should record the Error Code shown on the display along with the station ID and date and time of the occurrence.
3. Alternatively, if the error code does not appear when the connector is removed, be sure the connector is removed from the vehicle socket and switch OFF power at the circuit breaker feeding power to the charger. Wait a few seconds and switch the circuit breaker back ON again. Charging should start normally. If charging does not begin, call for field service representative.

**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL**

## OPERATION

### Error Codes

Error Code	Source	Severity	Description	Troubleshooting Steps
ERROR0 OR No MCU Communication	Power Board to PC	High	Display shows "No MCU Communication". The PC no longer has control over the actions of the Power Board.	<ul style="list-style-type: none"> <li>"1) Check all AC Input voltages (both ports) with a multimeter: line-to-line (208 to 240 VAC) and line-to-ground (120 VAC). If no voltages are found, ensure the switchgear (power going into the charger) is on.</li> <li>2) Ensure breaker is turned on for the port that is being troubleshooted.</li> <li>3) Connect a laptop via USB to Serial cable to the RS232 connector and check the firmware version of the Power Board. Update firmware if necessary. If the laptop is not communicating with the Power Board, replace the Power Board Assembly.</li> <li>4) Check if RS232 Board is the optically isolated version. Replace board if the existing board is not the optically isolated version.</li> <li>5) Check if the TTL cable is yellow-jacketed. Replace cable if the cable is not yellow-jacketed.</li> <li>6) Check the TTL cable for proper connection on the Power Board and the RS232 board. Ensure the connections are landed properly in their respective ports. Replace the cable if damaged.</li> <li>7) Check the serial connection between the RS232 Board and the PC (ribbon cable). Ensure connections are landed properly. Replace the cable if damaged. <ul style="list-style-type: none"> <li>a) Check position and polarity of the PC serial ribbon cables.</li> </ul> </li> <li>8) Plug a keyboard into the charger PC, press F11, and open a new tab on the browser. In the Address bar, type "127.0.0.1/config.php". Check for proper serial port assignment.</li> </ul>

**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL**

## OPERATION

### Error Codes (Continuation)

Error Code	Source	Severity	Description	Troubleshooting Steps
ERROR1	Contactor	High	Welded contacts - contactor stuck closed.	<p>1) Check the power board assembly version. If the power board assembly has cables for the high voltage lines, it is the older version. If the power board assembly has busbars for the high voltage lines, it is the current version.</p> <p>2) Check the AC Voltage across the J1772 line pin (either) to ground pin with a multimeter. If ANY voltage is detected, replace the Power Board Assembly. On older units replace the output contactor/relay.</p> <p>3) Connect a laptop via USB to Serial cable to the RS232 connector and check the firmware version of the Power Board. Update firmware if necessary.</p> <p>a) Check the fault condition on the center of the GUI. If no error is shown in the GUI, check the compatibility between the Power Board Firmware and the PC Software.</p> <p>4) Shut off the charger's input AC Breaker, then turn on. If you hear contactor open, there may have been a glitch in the Power Board.</p>

**AC Level 2 Charger  
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## OPERATION

### Error Codes (Continuation)

Error Code	Source	Severity	Description	Troubleshooting Steps
ERROR2	Grounds	High	Missing or loose grounds	<p>1) Check all physical grounds - ensure all the grounds are securely fastened.</p> <ul style="list-style-type: none"> <li>a) Check the power board ground. Ensure there is no conformal coat on the ground position.</li> </ul> <p>Additionally, ensure the ground mounted to the proper position.</p> <ul style="list-style-type: none"> <li>b) Check the ground lugs at the bottom of the unit</li> <li>c) Check the source ground - ensure the charger is properly grounded.</li> </ul>
ERROR5	Charger	High	Contactor not engaging due to excessive heat, causing the safety not to engage the contactor coil.	<p>1) Check for any loose connections on the terminal block (all terminals), and the output contactor/relay. Torque any loose connections down.</p> <p>2) Check if the Power Board thermistor is adhered to the contactor. Adhere to the contactor with Kapton Tape if necessary.</p> <p>3) Check the Power Board firmware and ensure the error shows up on the Level 2 GUI under Fault prompt. Record the number on the bottom center of the GUI.</p> <p>4) In the GUI, check the output current settings.</p> <p>5) Replace Power Board Assembly if the error persists.</p>

**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL**

## OPERATION

### Error Codes (Continuation)

Error Code	Source	Severity	Description	Troubleshooting Steps
ERROR6	Contactor	High	Contactor welded - voltage is present at charge handle	1) Replace Power Board Assembly - for older versions replace the relay. 2) In the L2 GUI, check the firmware version and fault status.
ERROR8	Charger/GFCI	High	Line voltage getting shorted	1) Check line to ground continuity on both the input and output sides. Check for any loose wires that are shorting to ground. 2) Check if the Power Board firmware is compatible with the PC Software. Update the firmware/software if necessary. 3) Check Power Board firmware on Level 2 GUI and ensure the error shows under fault prompt. 4) See if fault continues after disconnecting the vehicle. 5) Replace Power Board Assembly. If the Power Board assembly is the older version, replace the Power Board.
No Network Connection	Charger	Medium	Network connection is down (cellular, Wi-Fi, or ethernet)	1) Ensure cellular service/internet bill is paid 2) Update modem firmware (if applicable) 3) Update Gateware firmware for Wi-Fi Gateway Modem (if applicable) 4) Check Power Supply for proper voltage to the modem. (5V or 12V, depending on the modem) 5) Check antennae to ensure they are not disconnected from the radio device (modem or Wi-Fi) 6) Check modem APN 7) Check the lights on the modem housing 8) Dial into the unit remotely to see if the unit is reachable (if successful the URL to the EndPoint is not configured correctly)

**AC Level 2 Charger  
INSTALLATION AND USER'S MANUAL**

# OPERATION

## Error Codes (Continuation)

Error Code	Source	Severity	Description	Troubleshooting Steps
ERROR7	GFCI	Medium	Equipment detecting internal fault during pre-charge session before the vehicle starts pulling current	<p>1) If the error code shows up before the charging session is initiated, check the following items:</p> <ul style="list-style-type: none"> <li>a) Start another charging session, see if the error code is thrown again.</li> <li>b) Check for continuity on the charging cable pins from line-to-line and line-to-ground. If continuity is detected, replace the charging cable.</li> <li>c) If the error code is thrown again, plug a laptop in and open the Level 2 GUI. Check for fault status. If the fault is showing in the GUI, press the "Compute CRC" button to reset the Power Board - see if the error clears.</li> <li>d) If the error persists, check the Power Board firmware is compatible with the PC software. If not, update the appropriate firmware/software.</li> <li>e) Replace the Power Board assembly if the error persists.</li> </ul> <p>2) If the error code shows up after the charging session is initiated, refer to steps 1 (d) and 1 (e).</p>
ERROR9	Charger	Medium	Power Board programming has been corrupted	<p>1) Check Power Board on Level 2 GUI and reflash firmware to the Power Board - see if issue resolves.</p> <p>2) If issue does not resolve, replace the Power Board Assembly.</p>
Connect Vehicle	Charger / Vehicle	Medium	Occurs when the vehicle is connected, but the connection status is not reflected on the charger display.	<p>1) Check Pilot Line continuity from the J1772 pin to the Terminal Block.</p> <p>2) Check the charging cable for any kinks or cuts. Replace cable if these issues are detected.</p> <p>3) Connect to the Power Board on the Level 2 GUI and ensure the vehicle is changing the pilot state correctly under ""State"" in the center of the GUI. ("a" for idle, "b" for connected, and "c" for charging)</p> <p>4) Replace Power Board Assembly if the problem persists.</p>

## AC Level 2 Charger INSTALLATION AND USER'S MANUAL

# WARRANTY

### 9. Warranty

This Limited Product Warranty applies to customers who have purchased a BTCPower Electric Vehicle Charging Station(s) and/or a related product ("Product(s)") from BTCPower, Inc., or one of its authorized distributors.

**LIMITED WARRANTY:** Subject to the exclusions from warranty coverage set forth below, BTCPower warrants that the Product will be free from any defects in materials and/or workmanship (the "Limited Warranty") for a period of two (2) years after the date of the initial installation of the Product (the "Warranty Period"). If the Product becomes defective in breach of the Limited Warranty, BTCPower will, upon written notice of the defect received during the Warranty Period, either repair or replace, at BTCPower's election, the Product if it proves to be defective; provided, that BTCPower will not be responsible for the cost of any labor associated with the repair or replacement of any defective Product.

You acknowledge that replacement products provided by BTCPower under the Limited Warranty may be remanufactured or reconditioned Products or, if the exact Product is no longer manufactured by BTCPower, a Product with substantially similar functionality ("Replacement Products") will be supplied. Any Replacement Products so furnished will be warranted for the remainder of the original Warranty Period or ninety (90) days from the date of delivery of such Replacement Product, whichever is greater. Should BTCPower be unable to repair the Product, BTCPower will replace the Product with the latest model/version of a similar product in current production.

#### EXCLUSIONS FROM LIMITED WARRANTY

**IMPORTANT:** The Limited Warranty and on your Product, shall not apply to defects, or service repairs, resulting from any of the following:

- Force Majeure – any occurrence or extraordinary event or circumstance beyond the control of BTCPower that is an act of God or whether that occurrence is caused by war, riot, storm, (such as hurricane, flooding, earthquake, volcanic eruption, etc.), or other natural forces, or acts of nature or other causes.

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## REVISION HISTORY

### REVISION HISTORY

Revision	Date	ECN #	Description	Originator
C	02-Mar-13	1001	Initial Release	Cortes
D	10-Apr-13	1002	Added warnings per ETL	Hymel
E	12-Apr-13	1003	Added user instructions	Schulz
F	13-May-13	1004	Added Wi-Fi modem/ Level 2 without meter	Hymel
G	20-Nov-14	1005	Updated to new hardware	Paryani
H	02-Nov-15	1009, 1006	Updated hardware as well as payment controller	Cortes
I	05-Jan-17		Added updated charger images	Moinee
J	22-Mar-17		Updated Entire Manual	Elmassry
K	09-Aug-17		Updated Entire Manual Add Spec Drawings	Elmassry
L	09-Oct-17		Updated Entire Manual Added Troubleshooting and Warranty Information	Elmassry
M	10-Nov-17		Updated I-sheets	Elmassry
N	05-Jun-18		Added Display and Wi-Fi Instructions	Elmassry
O	18-Jun-18		Service Breaker requirements	Moinee
P	16-Jan-19		Cellular Connectivity site survey checklist	Moinee
Q	26-Feb-19		Added ADA Mounting Requirements	Ogawa
R	19-Jul-19		<ul style="list-style-type: none"> <li>• Changed document format</li> <li>• Added, rewrote, and re-arranged sections</li> </ul>	Sanchez
S	05-Nov-19		<ul style="list-style-type: none"> <li>• Updated the wire size requirements</li> <li>• Added ADA compliance for wall-mount</li> <li>• Added temperature rating requirements of the wires</li> </ul>	Sanchez

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## REVISION HISTORY

Revision	Date	ECN #	Description	Originator
T	09-Mar-20		<ul style="list-style-type: none"> <li>• Added Manufacturer information</li> <li>• Created a separate section for Communications Connectivity</li> <li>• Added Wi-Fi Kit Mounting Procedure and Wi-Fi Network Connection sections</li> <li>• Added Site Survey Form in the Annex</li> <li>• Added the Conduit Connection Options</li> <li>• Added Verification and Inspection (or Commissioning) Section</li> </ul>	Sanchez
U	10 Sept 21		<ul style="list-style-type: none"> <li>• Added ethernet port location</li> <li>• Added Gross and Net Weight</li> <li>• Updated Error Codes</li> <li>• Added Cable Reach</li> <li>• Specifications - Updated cable length</li> <li>• Description - Removed Nayax</li> </ul>	Dihayco
V	09 Feb 22		<ul style="list-style-type: none"> <li>• Updated Error Codes</li> <li>• Page 35 – updated breaker photo</li> </ul>	Dihayco

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**BTC POWER**

# Site Survey Form

## BTCPower EVSE Charger Connectivity

Newly Installed Unit

Existing Installed Unit

**Model Number**

**Description**

MM

DD

YYYY

Date

**Unit ID**

**Serial Number**

### Charger Location Data

Address: (Street, City, State, & Zip Code)			
GPS Coordinates:	Latitude:	Longitude:	
Description of Location:	Outdoor <input type="checkbox"/>	Inside Building <input type="checkbox"/>	In Parking Structure <input type="checkbox"/>
Obstruction:	Trees <input type="checkbox"/>	Buildings <input type="checkbox"/>	Hills <input type="checkbox"/>
	Power Lines <input type="checkbox"/>	Others (please specify): _____	

### Cellular Signal Strength Measurement (using SureCall device)

RSSI	<b>Requirement:</b> -69 dBm (minimum)	
RSRP	<b>Requirement:</b> -100 dBm (minimum)	
RSRQ	<b>Requirement:</b> -11 dBm (minimum)	
SINR	<b>Requirement:</b> > 6 dB	

### Wi-Fi Signal Strength Measurement (using Bullet M2 HP device)

RSSI	<b>Requirement:</b> -62 dBm (minimum)	
SINR	<b>Requirement:</b> > 10 dB	

## Site Survey Form

### Connection Points between the Power Supply to Modem to PC and Antenna to Modem

Nominal Voltage Out of Power Supply to Modem	
Ethernet Cat5 Cable Connection	
Antenna SMA Connectors	

### Contractor's Information

Technician Name:	
Technician Signature:	
Technician Company Name:	