

Watt Point™

By Control Module Inc., EVSE LLC

State of the Art EVSE

Electric Vehicle Supply Equipment (EVSE)

Model 3704

For Wall and Pole Mounted Installations



Control Module Inc.

Founded in 1969

EVSE LLC

User Manual and Installation Guide

Model 3704

Electric Vehicle Supply Equipment (EVSE)

Patents Pending

3704-IG-001 Rev D

July 2016

Table of Contents

Important Notes.....	iv
SAFETY AND COMPLIANCE	IV
WARRANTY INFORMATION AND DISCLAIMER	IV
LIMITATION OF LIABILITY	IV
FCC COMPLIANCE STATEMENT	IV
IMPORTANT.....	IV
EXPOSURE TO RADIO FREQUENCY ENERGY	IV
NO ACCURACY GUARANTEE.....	V
U.S. PATENT NUMBERS:.....	V
COPYRIGHT AND TRADEMARKS:.....	V
Instructions Pertaining To Risk of Fire or Electrical Shock	vi
IMPORTANT SAFETY INSTRUCTIONS	VI
INSTRUCTIONS DE SECURITE IMPORTANTES	VII
Introduction to Model 3704-XXX EVSE Unit.....	1
SAFETY FEATURES.....	1
PAYMENT OPTIONS.....	1
<i>Communication Options</i>	1
<i>Pole-Mounted Connection</i>	2
<i>Wall-Mounted Connection</i>	2
<i>Remote Connection</i>	2
SPECIFICATIONS.....	3
3704-MOUNTING POLES PRODUCT ORDERING CHART.....	4
Site Preparation	5
DIMENSIONS	5
SITE SELECTION	7
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN	8
POLE-MOUNTING OPTIONS.....	10
WALL-MOUNTING OPTIONS.....	11
ELECTRICAL SERVICE CONNECTIONS.....	12
MOUNTING THE MODEL 3704	14
<i>Removing the Cover</i>	14
<i>Wall-Mounting 3704 EVSEs</i>	15
<i>Single or Dual Pole-Mounting The 3704 EVSE</i>	16
WIRING THE EVSE FOR POWER.....	17

WIRING THE EVSE FOR SERIAL CONNECTIONS	18
REPLACING THE COVER	19
APPLYING OPERATING INSTRUCTIONS	19
Installation Notes	21
Options and Settings	22
DIP SWITCH SETTINGS	22
REMOTE CONTROLS (EXTERNAL CONTROL INPUT)	23
Operation	24
Testing and Fault Modes	25
STATUS INDICATOR CHART	26
User Maintenance	27
MOVING, TRANSPORTING, AND STORAGE	27
Customer Support	28
Warranty	29

Important Notes

Safety and Compliance

This document provides instructions for installing the Watt Point™ Charging Station Model 3704 Series. Before installation of the Watt Point Charging Station by licensed professionals, you should review this manual carefully and consult with a licensed contractor, licensed electrician and trained installation personnel to ensure compliance with local building practices, climate conditions, safety standards, and state and local codes.

The Watt Point Charging Station should be inspected by a qualified installer prior to the initial use. Under no circumstances will compliance with the information in this manual relieve the user of responsibility to comply with all applicable codes or safety standards. This document describes the most commonly-used installation and mounting scenarios. If situations arise in which it is not possible to perform an installation following the procedures provided in this document, contact Control Module Inc., EVSE LLC. Control Module Inc., EVSE LLC, is not responsible for any damages that may occur resulting from custom installations that are not described in this document.

Warranty Information and Disclaimer

Your use of, or modification to, the Watt Point Charging Station in a manner in which the Watt Point Charging Station is not intended to be used or modified will void the limited warranty. Other than any such limited warranty, the Control Module Inc., EVSE LLC, products are provided “AS IS,” and Control Module Inc., EVSE LLC, and its distributors expressly disclaim all implied warranties, including any warranty of design, merchantability, fitness for particular purposes and non-infringement, to the maximum extent permitted by law.

Limitation of Liability

In no event shall Control Module Inc., EVSE LLC, or its authorized distributors be liable for any indirect, incidental, special, punitive, or consequential damages, including without limitation, lost profits, lost data, loss of use, cost of cover, or loss or damage to the Watt Point Charging Station, arising out of or relating to the use or inability to use this manual, even if Control Module Inc., EVSE LLC, or its authorized distributors have been advised of the possibility of such damages.

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Important

Changes or modifications to this product not authorized by Control Module, Inc., EVSE LLC, could affect the EMC compliance and revoke your authority to operate this product.

Exposure to Radio Frequency Energy

The radiated power output of the ZigBee® radio (optional) in this device is below the FCC radio frequency exposure limits for uncontrolled equipment. This device should be operated with a minimum distance of at least 7.8 inches (20 cm) between the ZigBee antenna and a person's body, and must not be co-located with any other antenna or transmitter by the manufacturer, subject to the conditions of the FCC Grant.

No Accuracy Guarantee

Reasonable effort was made to ensure that the specifications and other information contained in this manual are accurate and complete at the time of publication. The specifications and other information in this manual, however, are subject to change at any time and without prior notice.

U.S. Patent Numbers:

D733, 648

Copyright and Trademarks:

Copyright 2014-2016 Control Module Inc., EVSE LLC. All rights reserved. This material is protected by the copyright laws of the United States and other countries. It may not be modified, reproduced or distributed without the prior, express written consent of Control Module Inc., EVSE LLC.

Watt Point is a U.S. registered trademark and service mark of Control Module Inc., EVSE LLC. All other products or services mentioned have the trademarks, service marks, registered trademarks or registered service marks of their respective owners. Control Module Inc., EVSE LLC, has filed several patent applications.

ZigBee is a registered trademark of the ZigBee Alliance.

Instructions Pertaining To Risk of Fire or Electrical Shock

The following is a summary of safety concerns relevant to the installation and use of the Model 3704 EVSE Unit. Failure to follow these safety instructions may lead to serious injury, death and/or damage to the equipment.



WARNING: is used to provide a warning of hazardous voltage and possibility of electric shock.



CAUTION: is used to provide awareness of important safety information in these instructions.

Important Safety Instructions



WARNING: Only qualified personnel should perform the installation. This installation must be performed in accordance with all local electrical/building codes and ordinances. Follow lockout/tagout procedures.

Improper connection of the equipment grounding conductor may result in a risk of electric shock. Reference National Electrical Code, ANSI/NFPA 70 for proper sizing of the ground conductor.

Do not use this product if the flexible power cord or EV cable are frayed, have broken insulation, or show any signs of damage.



CAUTION: This device is intended to be used to charge vehicles that do not require ventilation during charging.

To reduce the risk of fire, connect only to a dedicated circuit with 40A maximum branch circuit over-current protection in accordance with the National Electrical Code, ANSI/NFPA 70.

(For Zigbee equipped units)

To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended. The antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter.

Additional considerations which will contribute to safe operation of this unit include the following:

- DO:** - Read all instructions before using this product.
 The device should be supervised when used around children.
 In case of a problem, contact your installer or CMI Customer Support.
- DON'T:** - Put fingers into the electric vehicle connector.
 Use this product if the enclosure or the EV connectors are broken, cracked, open or show any other indication of damage.
 Attempt to repair or service the unit yourself.

SAVE THESE INSTRUCTIONS

Instructions De Sécurité Importantes



AVERTISSEMENT: sert à fournir une alerte de tensions dangereuses et possibilité de choc électrique.



ATTENTION : est utilisé pour fournir la sensibilisation des renseignements importants dans ces instructions.

INSTRUCTIONS DE SÉCURITÉ IMPORTANTES



AVERTISSEMENT: Seul le personnel qualifié doit effectuer l'installation. Cette installation doit être effectuée conformément à tous les codes électrique/bâtiment locaux et ordonnances. Suivre les procédures de verrouillage/verrouillage.

Connexion inadéquate de l'équipement échouement du chef d'orchestre peut entraîner un risque de choc électrique. Code National de l'électricité, ANSI/NFPA 70 pour le dimensionnement bon chef d'orchestre au sol de référence.

Ne pas utiliser ce produit si le code de la puissance souple ou l'EV sont effiloché de câble, ont brisé isolant ou présentent pas de signes de dommages.



ATTENTION: Ce dispositif est destiné à être utilisé pour charger les véhicules qui ne nécessitent pas de ventilation pendant la recharge.

Afin de réduire le risque d'incendie, se connecter uniquement à un circuit dédié avec 40 a maximum des branches circuit over-current protection conformément aux dispositions du Code électrique National, ANSI/NFPA 70.

(Pour les unités de Zigbee équipé)

Pour satisfaire les exigences de l'exposition du FCC RF pour des périphériques mobiles de transmission, une distance de séparation de 20 cm ou plus devrait être maintenue entre l'antenne de ce dispositif et de personnes au cours de l'opération de l'appareil. Afin d'assurer la conformité des opérations au plus près que cette distance n'est pas recommandée. L'antenne utilisée pour cet émetteur ne doit pas être colocalisé conjointement avec une autre antenne ou éme.

Voici d'autres considérations qui contribueront à la sécurité de fonctionnement de cette unité:

DO: - Lire toutes les instructions avant d'utiliser ce produit.
Le dispositif devrait être supervisé lorsqu'il est utilisé autour des enfants.
En cas de problème, contactez votre installateur ou soutien à la clientèle CMI.

NE PAS: - Mettre les doigts dans le connecteur de véhicule électrique.
Utiliser ce produit si l'enceinte ou les connecteurs EV sont cassées, fissuré, ouvrir ou afficher toute autre indication de dommages.
Tenter de réparer ou d'un service de l'unité de vous-même.

ENREGISTREZ CES INSTRUCTIONS

Introduction to Model 3704-XXX EVSE Unit

The Model 3704 Watt Point™ Electric Vehicle Supply Equipment (EVSE) is a 7.2 KW wall- or pole-mounted EVSE with Auto Coil™ cable retraction, capable of providing up to 30A at 208-240VAC, single phase, 50 or 60 Hz. It is configurable as a single wall mount, single or dual pole mount. This unit complies with the SAE J1772 specifications for supplying electrical power to a J1772-compatible Electric Vehicle (EV). The Model 3704 conveniently coils the 20-foot cable internally when not in use. The model 3704 is capable of being controlled remotely to apply, reduce or disconnect power to the electric vehicle, and measures both voltage and current being supplied to the EV. The 3704 communicates directly with a Payment or Gateway Module, and five status lights clearly indicate the state of the charging operation. For information about Control Module Inc. products featuring automatically retracted cables, please contact us at the Customer Support number noted in this document.

Safety Features

- Spark Proof** - Electrical power is not applied to the power connector until the J1772 connector is fully inserted into the power inlet on the Electric Vehicle and communication has been established. When the mechanical release switch is pressed on the power connector, voltage on the power connector is removed.
- Shock Proof** - The Model 3704 EVSE is equipped with a Ground Fault Circuit Interrupter (GFCI) which will disconnect the electrical voltage from the power cord and connector should current leakage to ground exceed 20 MA. The GFCI circuit is automatically tested at the start of each charge sequence. The GFCI will attempt three re-closures to see the ground fault cleared before reporting a problem.
- Over Current** - The Model 3704 EVSE, when in use, continuously monitors the current being delivered to the EV. Should the current exceed 32A for 15 seconds, the Model 3704 EVSE will disconnect the power to the EV before the breaker trips. After disconnecting, the 3704 will auto-reset.
- Plug-Out Detection** - The Model 3704 EVSE is equipped with a Plug-Out Detection circuit that identifies when the connector is attached to the electric vehicle. This allows the EVSE to immediately remove electric power from the electric vehicle before the connector is totally removed from the vehicle inlet.

Payment Options

A Payment Module is used with the 3704 EVSE in fee-based electric vehicle charging environments to facilitate commercial transactions. The 3725-104 Payment Module is engineered to work with the 3704 EVSE, whether the EVSE is single- or dual-mounted on a pole, or wall-mounted. The Payment Module and EVSE can be located on the same pole, nearby when wall-mounted, or mounted remotely from each other. Refer to the *3725 User Manual and Installation Guide* for more information about the Payment Module.

Note: A Gateway Module (Model 3727-200) can be used in place of the Payment Module when two-way communication is required without payment functions. . Refer to the *3727 User Manual and Installation Guide* for more information about the Gateway Module.

Communication Options

There are two communication options available for facilitating communication between the EVSE and payment or gateway systems:

Serial Connection

A serial connection can be established between one or more 3704 EVSEs and a Payment Module or Gateway. A single serial Payment Module or Gateway can support from one to eight EVSEs, depending upon its configuration.

ZigBee Connection

The 3704 will also communicate to a Gateway or Payment Module using the ZigBee Mesh protocol, allowing wireless connections. ZigBee networks are secured by 128-bit symmetric encryption keys, so security is assured. A single ZigBee Payment Module or Gateway can support up to 32 remote EVSEs.

Pole-Mounted Connection

When the 3704 EVSE(s) and the 3725-104 Payment Module are mounted together on a pole, typically, an internal serial cable connects each EVSE to the Payment Module. The Payment Module then connects to an external network via a Cellular modem or a hard-wired Ethernet connection. The Cellular modem securely transmits encrypted payment data to and receives authorizations from external PCI-compliant processors. Communication can also link the EVSE network with third-party network management providers for reporting and call center support.

Wall-Mounted Connection

A configuration where it is most convenient to wall-mount the 3704 EVSEs typically means the 3725-104 Payment Module is also wall-mounted nearby. Like the pole-mounted option, connection of EVSE(s) and Payment Module is made using either serial-cable connections, or a ZigBee Mesh network.

The Payment Module in this configuration operates identically to that described above for the pole mounted unit.

Remote Connection

Remote connections between 3704 EVSEs and a Payment Module can be made, typically using a ZigBee Mesh network. This allows the EVSEs and Payment Module to be located a greater distance from each other, and also a greater number of EVSEs to work with a single Payment Module. (See chart below).

EVSE to Payment Module Connection	EVSE to Payment Module Distance	EVSEs per Payment Module
Serial	Cable length should be no more than 180 feet from any EVSE to the Payment Module	8
ZigBee Mesh Network	<p style="text-align: center;">Cable Length</p> <p>Indoors: 30 – 65 feet (Depending on walls to penetrate.)</p> <p>Outdoors: Up to 4800 feet (Line-of-sight, depending on signal strength and environmental conditions.)</p>	32

NOTE: Administrative data can be transmitted to a remote laptop computer (via the Gateway with a ZigBee Mesh network option only) without accessing an external network.

Specifications

Product Code

Product Code	3704
On/Off (No Communication)	3704-001
ZigBee Communication	3704-002
Serial Communication	3704-003

Electrical*

Voltage	208-240 VAC
Current (Rated)	30A/16A Switchable by Dip Settings
Current (Simulated Level 1)	7A@208-240 VAC (On Command)
Connections	Line 1 and 2, Ground
Required Service (Panel Breaker)**	2-pole 40A breaker Non GFCI on a dedicated circuit/20A Switchable by Dip Settings
Stand By Power (Per EVSE)	Less than 8W typical (without communication/Payment Module/Gateway operating)
Power Output	7.2KW

Safety Features

Over Current Disconnect	32A/18A Switchable by Dip Settings
Surge Protection	6KV @ 3000A
Ground Fault	Internal 20 MA CCID with auto re-closure (three attempts)

Compliance

Safety	IEC/UL/CSA C22.2 61010-1, UL2594, UL2231-1, UL2231-2, NEC Article 625, SAE J1772
EMC	FCC Part 15 Class A, Canadian ICES-003

Communications

ZigBee	Model 3704-002 contains FCC ID: MCQ-PROS2B, IC: 1846A-PROS2B
--------	--

Environmental

Operating Temperature	-22° to 122° F (-30° C to 50° C) ambient
Operating Humidity	Up to 95% non-condensing
NEMA Rating	NEMA 3R

General

Dimensions	37 in (h) x 10.25 in (w) x 10.5 in (d) (Excluding Pole)
Weight	32 lbs. (Excluding Pole)
Mounting	Wall, Surface-mounted Pole

* Observe all required Lockout/Tagout procedures while making any electrical connections or servicing the unit.

** Dual requires two breakers.

3704-Mounting Poles Product Ordering Chart

Select an EVSE product number based on its mode of communication (ZigBee or Serial) to a Payment Module or Gateway (On/Off if none). The 3704-001, 002 and 003 can be used as wall-mounted units without ordering additional items. If using a pole mounted configuration, select the appropriate Pole Kit based on EVSE type (single/dual) and mode of communication (Zigbee/Serial) to the Payment/Gateway Module. Different poles are selected if a Payment Module/Gateway is on the same pole as the EVSE, as noted below. EVSE, pole, Gateway/Payment modules are separate line items on the purchase order.

EVSE Model		Pole	Wall-Mount
On/Off	3704-001	Purchase pole separately (4" x 4" x 62.5")	No additional hardware necessary
ZigBee	3704-002		
Serial	3704-003		
Single Pole Kits			
<u>ZigBee or On/Off</u> No (or Remote) Payment or Gateway		3841-300	
<u>Serial</u> No (or Remote) Payment or Gateway		3841-301	
<u>Serial or ZigBee</u> Compatible with Payment or Gateway using <u>Cellular Host Comm.</u>		3841-302	
<u>Serial or ZigBee</u> Compatible with Payment or Gateway using <u>Ethernet Host Comm</u> or <u>Remote Serial</u>		3841-303	
Dual Pole Kits			
<u>ZigBee or On/Off</u> No (or Remote) Payment or Gateway		3841-306	
<u>Serial</u> No (or Remote) Payment or Gateway		3841-307	
<u>Serial or ZigBee</u> Compatible with Payment or Gateway using <u>Cellular Host Comm.</u>		3841-308	
<u>Serial or ZigBee</u> Compatible with Payment or Gateway using <u>Ethernet Host Comm</u> or <u>Remote Serial</u>		3841-309	

Site Preparation

Power must be located at each charging location and be supplied by individual, dedicated 40A non-GFCI circuit breakers at the service panel. A dual Model 3704 would require two circuit breakers. A qualified electrician or installer should provide local power at each charging site, install conduit runs back to the main service panel and make final wiring connections for power at the service panel.

Dimensions

Refer to **Figure 1A** for wall-mounting dimensions of the 3704 and **Figure 1B** for pole-mounting dimensions.

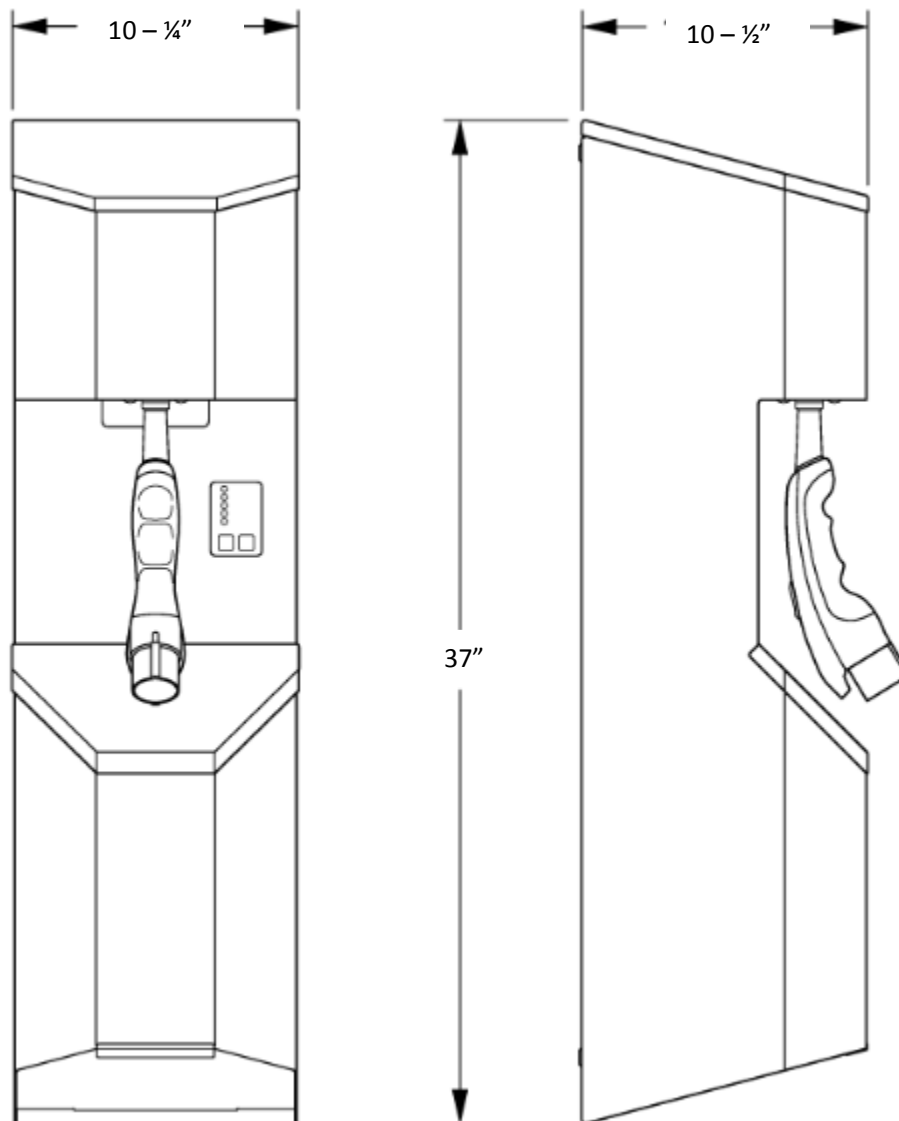


Figure1A

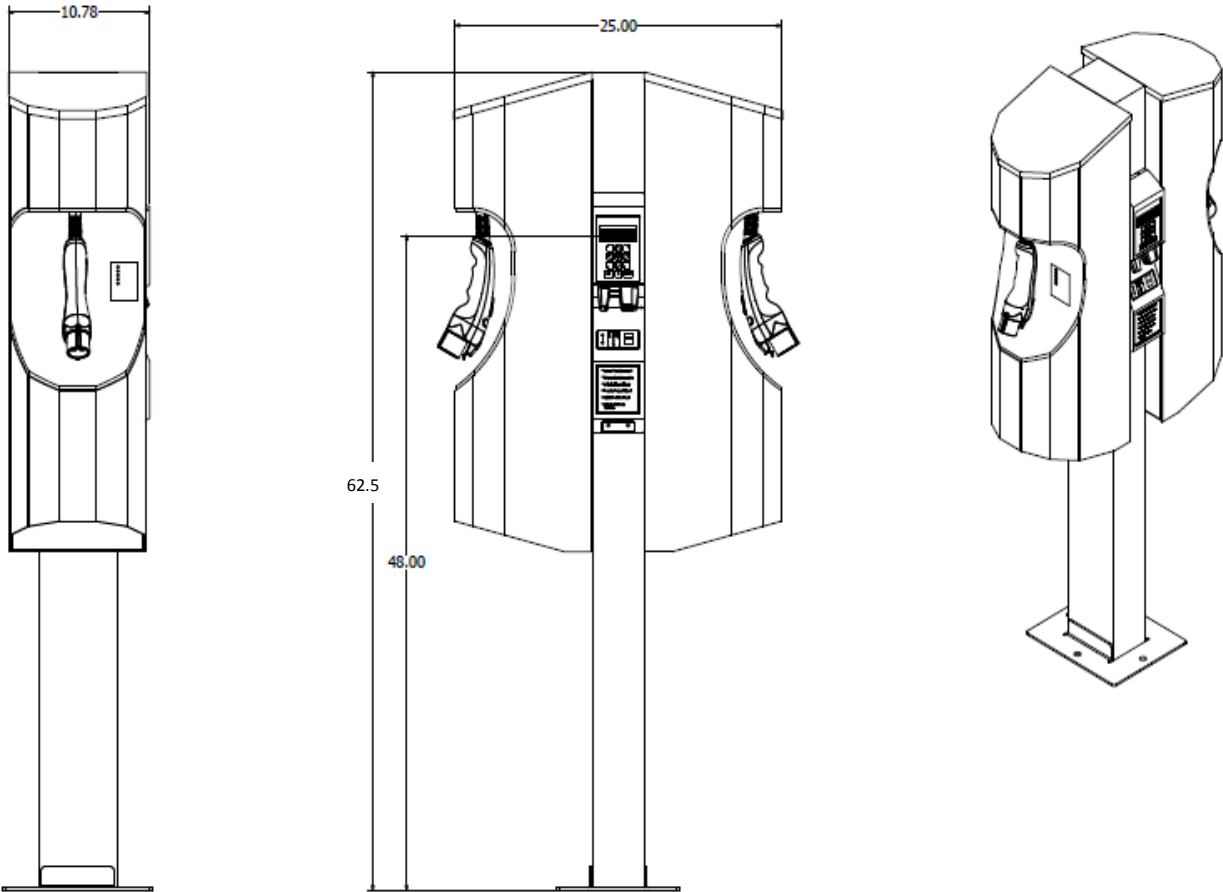


Figure 1B

Site Selection

The Model 3704 is designed to be located for a specific parking lane or pair of lanes, if desired (**Figure 2**). The power cable may be extended up to twenty feet (20'), easily reaching the front or side of the Electric Vehicle being serviced. The site for the EVSE should be selected where it is easily seen, and as close as possible to the power source.

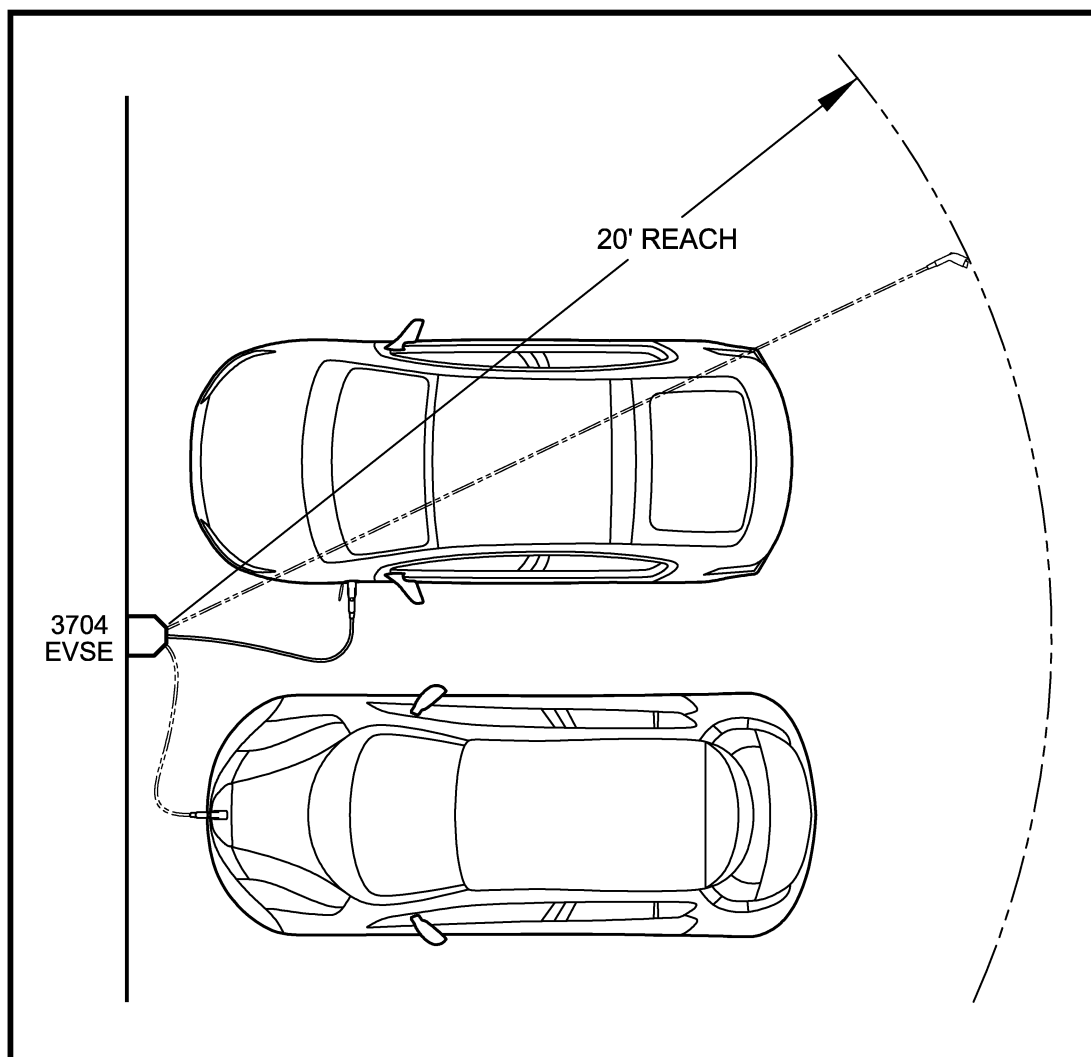


Figure 2

2010 ADA Standards for Accessible Design

According to the 2010 Americans With Disabilities Standards for Accessible Design, “Each facility or part of a facility constructed by, on behalf of, or for the use of a public entity shall be designed and constructed in such manner that the facility or part of the facility is readily accessible to and usable by individuals with disabilities, if the construction was commenced after January 26, 1992.”

While installers should be knowledgeable about all aspects of the requirement, several critical paragraphs and illustrative figures (Fig. 3A-3E) are referenced below to assist with locating the EVSE to meet reach and obstruction requirements of the Act. When properly located relative to the curb, the Model 3704 is compliant with all aspects of the following ADA paragraphs.

303.2 Changes in Level – Vertical

Changes in level of $\frac{1}{4}$ inch (6.4 mm) high maximum shall be permitted to the vertical.

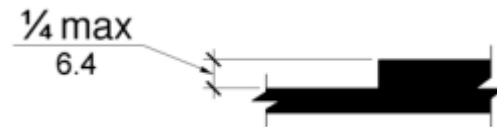


Figure 3A

308.2.1 Forward Reach – Unobstructed

Where a forward reach is unobstructed, the high forward reach shall be 48 inches (1220 mm) maximum and low forward reach shall be 15 inches (380 mm) minimum above the finish floor or ground.

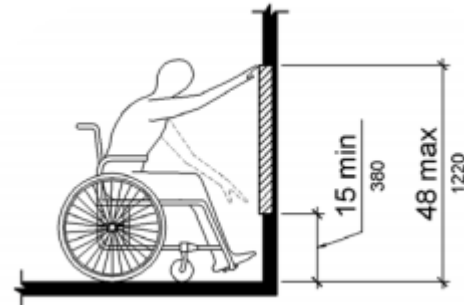


Figure 3B

308.2.2 Forward Reach – Obstructed High Reach

Where a high forward reach is over an obstruction, the clear floor space shall extend beneath the element for a distance not less than the required reach depth over the obstruction. The high forward reach shall be 48 inches (1220 mm) maximum where the reach depth is 20 inches (510 mm). Where the reach depth exceeds 20 inches (510 mm), the high forward reach shall be 44 inches (1120 mm) maximum and the reach depth shall be 25 inches (635 mm) maximum.

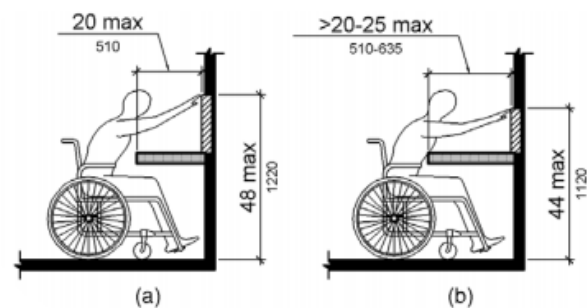


Figure 3C

308.3.1 Side Reach – Unobstructed

Where a clear floor or ground space allows a parallel approach to an element and the side reach is unobstructed, the high side reach shall be 48 inches (1220 mm) maximum and the low side reach shall be 15 inches (380 mm) minimum above the finish floor or ground.

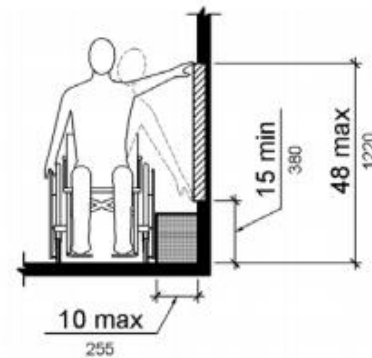


Figure 3D

308.3.2 Side Reach – Obstructed High Reach

Where a clear floor or ground space allows a parallel approach to an element and the high side reach is over an obstruction, the height of the obstruction shall be 34 inches (865 mm) maximum and the depth of the obstruction shall be 24 inches (610 mm) maximum. The high side reach shall be 48 inches (1220 mm) maximum for a reach depth of 10 inches (255 mm) maximum. Where the reach depth exceeds 10 inches (255 mm), the high side reach shall be 46 inches (1170 mm) maximum for a reach depth of 24 inches (610 mm) maximum.

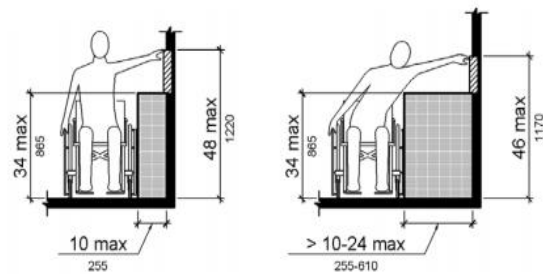


Figure 3E

309 Operable Parts

309.1 General – Operable parts shall comply with 309.

309.2 Clear Floor Space – A clear floor space or ground space complying with 305 shall be provided.

309.3 Height – Operable parts shall be placed within one or more of the reach ranges specified in 308.

309.4 Operation – Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds maximum.

Pole-Mounting Options

Mount the 3704 mounting pole directly to a ground-level flat surface which should accommodate the weight and pull force of the EVSE(s). The weight of a single 3704 pole is 45.7 pounds, while a dual pole weighs 87.7 pounds. The force required to pull the charging cable from the 3704 is five pounds maximum. A concrete sidewalk is a typical mounting surface. A one-inch conduit (to support AC wiring from the breaker panel) is typically brought up into the center bottom of the hole. If any communication to the 3704 is serial or Ethernet, an additional 3/4 inch conduit needs to be brought up into the center bottom of the pole. If a concrete base is being poured to support the 3704 EV charger, the suggested size should be 3'x3'x4" minimum. However, whatever the mounting surface and method, it should conform to town/state/federal building codes. (Note: It is not recommended to mount the 3704 pole directly to asphalt. If required, cut a section of the asphalt and pour a concrete base.

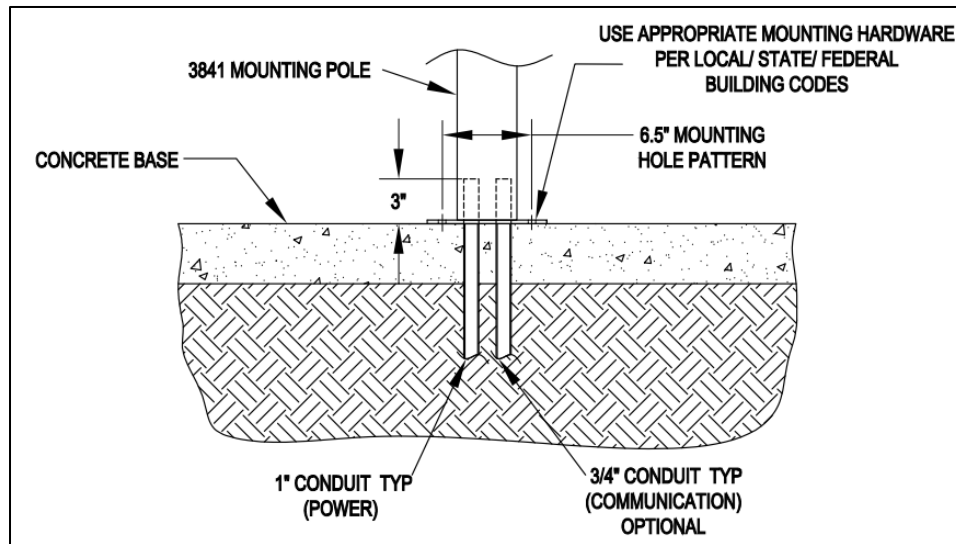


Figure 6D

In areas where frost is a concern, you can also follow these steps to mount the pole utilizing an 18" wide Sonotube, Schedule 40 conduit, four 1/2" J-bolts 12" long, rebar, ground rod and #8 bare copper wire, cast in place a mounting base, as per dimensions shown in Fig 6B and 6E. Conduit considerations are the same as above.

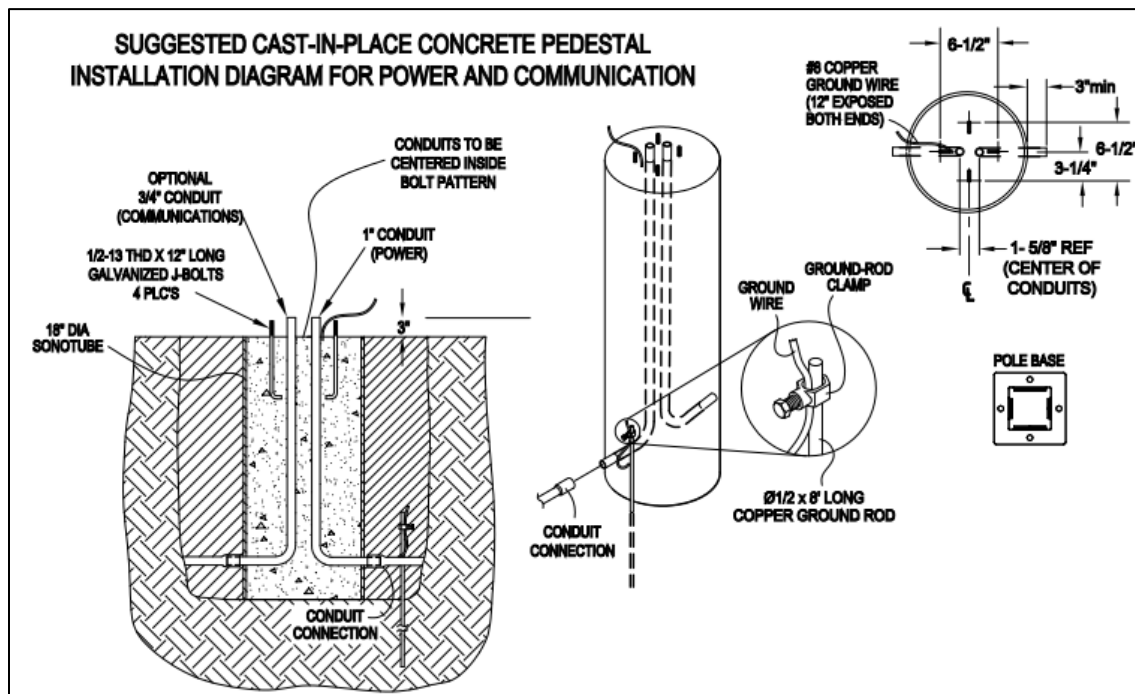
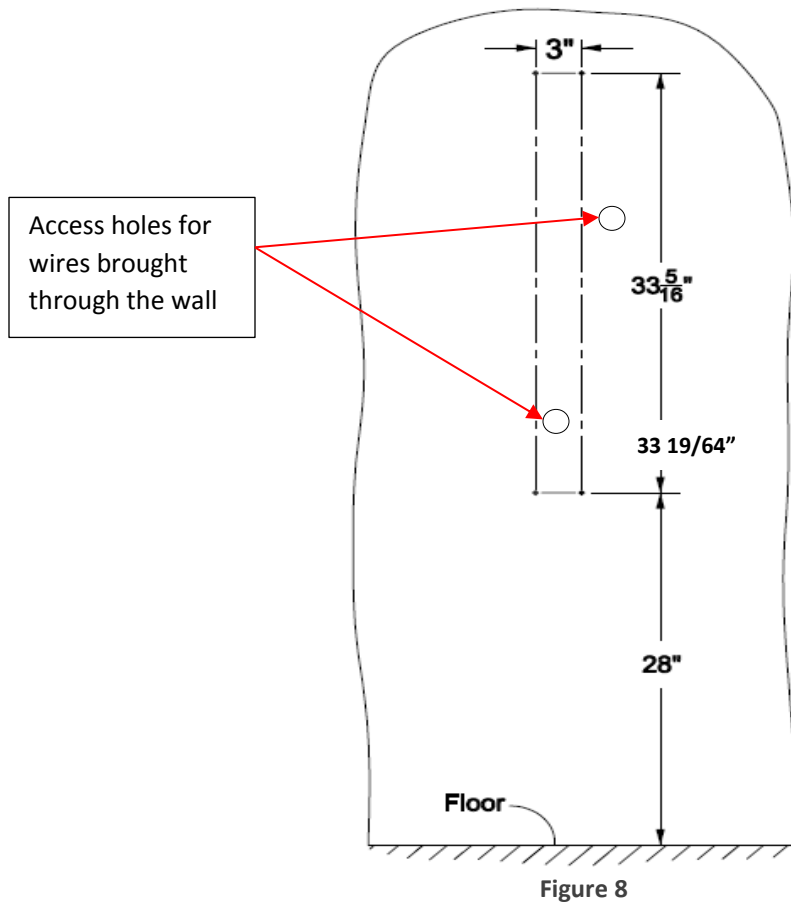


Figure 6E

Wall-Mounting Options

There are 4 mounting-screw holes in the rear frame of the 3704 EVSE, two at the top and two at the bottom. Using the mounting hole pattern depicted (**Figure 8**), drill pilot holes if necessary. Ensure the hole pattern is plumb and level. **NOTE** – Conduit(s) enters through the bottom-center, conduit-access hole.



Electrical Service Connections

(DUAL UNIT SHOWN)

Note: Observe all required Lockout/Tagout procedures while making any electrical connections or servicing the model 3704.

1) 220/240 VAC, Single Phase Transformer:



Caution:

The two phases used must each measure 120V to Neutral. Earth Ground must be connected to Neutral at only one point, usually at the Service Entry Breaker Panel.



Attention:

Les deux phases utilisés doivent chaque 120V mesure au Neutre. Motif de la terre doit être connecté au Neutre à un seul point, habituellement à l'entrée de Service Breaker Panel.

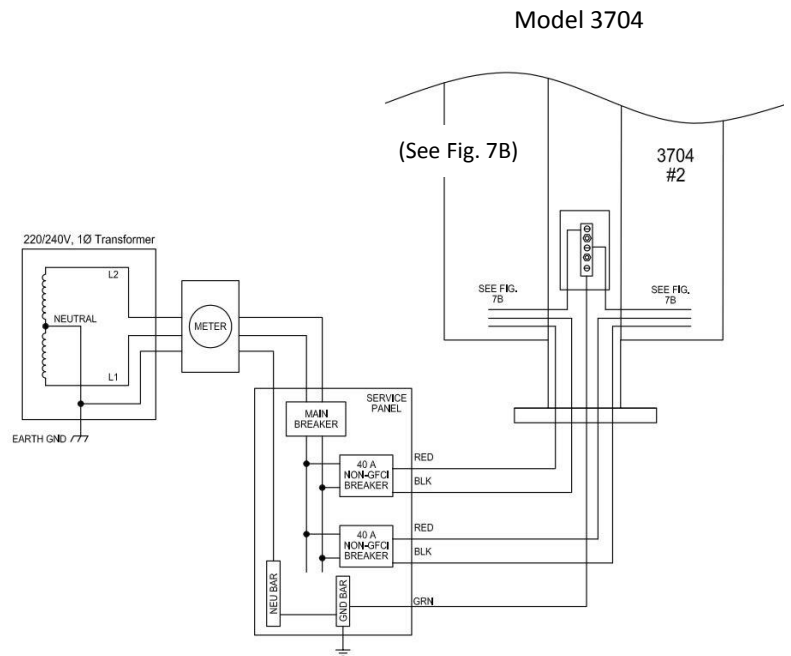


Figure 9A

2) 208 VAC 3-Phase Wye Transformer:



Caution:

This EVSE is a single-phase device. Do not connect all 3 phases of a 3-phase feed!!! You may use any two phases of a 3-phase, Wye-connected feed !

The center-point of the 3 phases (usually used as Neutral) must be grounded somewhere in the system. A current-carrying Neutral is not needed by the Model 3704. The two phases used must each measure 120V to Neutral.



Attention:

Cette EVSE est un appareil monophasé. Ne pas connecter tous les 3 phases d'un flux de phase 3!!! Vous pouvez utiliser tout deux phases d'une phase 3, Wye connecté nourrir !

Le point central des 3 phases (généralement utilisé comme Neutre) doit reposer quelque part dans le système. Il n'est pas nécessaire de Neutre porteurs de courant par le Modèle 3704. Les deux phases utilisés doivent chaque 120V mesure au Neutre.

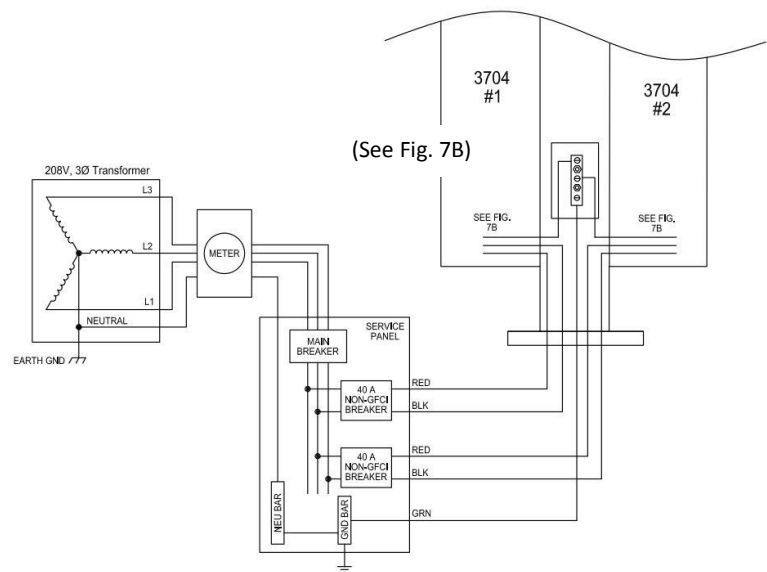


Figure 9B

Note: A separate 40 Amp. Non-GFCI breaker is required for each individual EVSE.

3) 240V Delta Transformer:

**Caution:**

When using a Delta-style power source for the EVSE Model 3704, there must be a center tap. Only the two phases on either side of the center tap (L1 and L2) can be used and each must measure 120V to Neutral. If this is not done, the ground-fault protection will not function properly. Also, the center tap must be connected to ground.

**Attention:**

Lorsque vous utilisez une source d'alimentation de Delta-style pour le modèle de EVSE 3704, il doit y avoir un robinet center. Seuls les deux phases de chaque côté de l'eau du robinet center (L1 et L2) peuvent être utilisés et chacun doit mesurer 120 v au Neutre. Si cela n'est pas fait, la protection du sol-faute ne fonctionnera pas correctement. Aussi, le robinet du Centre doit être connecté au sol.

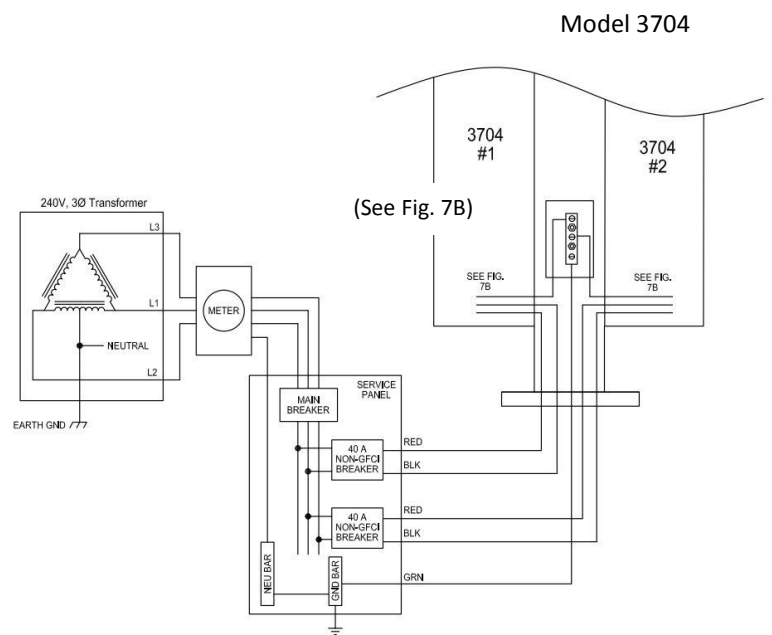


Figure 9C

Note: A separate 40 Amp. Non-GFCI breaker is required for each individual EVSE.

Mounting the Model 3704

Removing the Cover

The 3704 EVSE is shipped with the front cover on. Whether wall- or pole-mounting single or dual EVSEs, begin by removing the EVSE cover to gain access to the four mounting screw holes.

1. Remove the two screws near the conduit knock-out access hole in the bottom of the cover (Figure 4A).



Figure 4A

2. Pull the cover slightly out at the bottom of the EVSE (Figure 4B).



Figure 4B

3. Holding the cover at the top and bottom, with the bottom-cover clear of the frame, push the cover slightly up to clear the cover's top from the top-rear lip of the EVSE frame (Figure 4C).

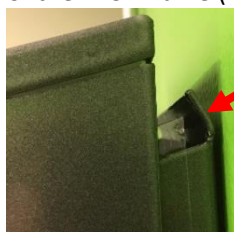


Figure 4C



Figure 4E



Figure 4D

4. With both top and bottom cover tabs clear of the EVSE frame, hold the cover in the middle and pull it straight out (Figure 4D).

Important! - While pulling the cover out, carefully maneuver both the cover and J1772 cable connector to allow the connector and "Bee-Guard" to pass through the cover's access hole (Figure E).

5. When clear of the J1772 cable connector, place the cover in a safe location until needed later.
6. Remove the shipping cardboard from the cable drum. (Figure 4F)



Figure 4F

Wall-Mounting 3704 EVSEs

Single Wall-Mount (Dual Configurations Mount Side by Side with Dedicated Non-GFCI Breakers)

There are 4 mounting-screw holes in the rear frame of the 3704 EVSE, two at the top and two at the bottom (Figure 5A).

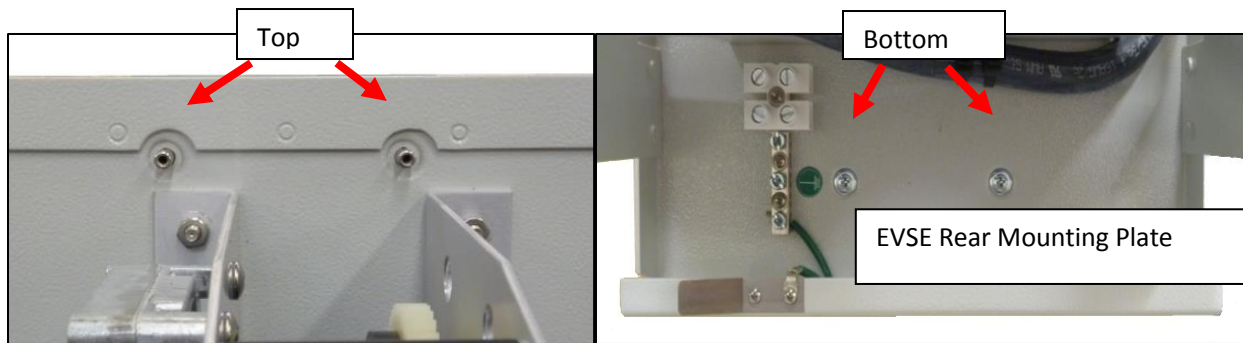


Figure 5A

1. Using the mounting hole pattern depicted (Figure 5B), drill pilot holes if necessary, and attach the 3704 EVSE to the wall. Do not fully tighten the screws.
2. Using a level, ensure the EVSE is level and plumb on all sides. Securely tighten all mounting screws.

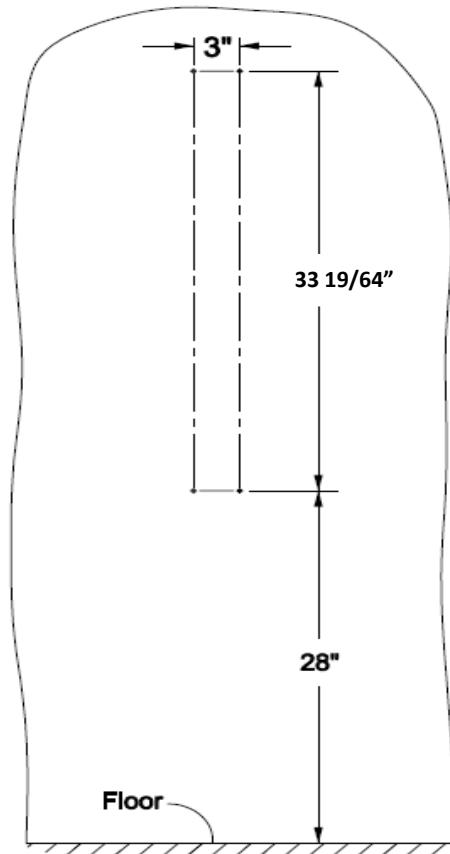


Figure 5B

NOTE – Conduit enters through the bottom-center, conduit-access hole. See the *Wiring the EVSE* section for connections.

Single or Dual Pole-Mounting The 3704 EVSE

A pole-mount configuration uses a 62.5" mounting pole that is pre-drilled so one or two 3704 EVSEs can be mounted to it. There is also an access cutout in the pole, to facilitate wiring through the center (Figure 6A). In order to ensure maximum stability, be sure to mount the pole to a flat surface, or use washers when mounting to add stability.

NOTE – Conduit enters through the center of the mounting pole and passes through to the EVSE(s) via the conduit access hole in the pole, which aligns with the access hole in the EVSE when properly mounted.

Before mounting the EVSE(s) to the pole, ensure the wiring for the EVSE(s) is routed through the center of the pole and accessible via the access cutout. See the *Wiring the EVSE* section for connections.

With the pole securely mounted (Figure 6B) – level and plumb on all sides – and the cover removed from the EVSE(s), the mounting holes and conduit access hole on each EVSE will align with the pre-drilled mounting holes and conduit access hole on the pole.

1. Using four #10 screws and lock washers, attach the EVSE to the side of the pole using the pole's mounting holes. Ensure the Pole's and EVSE's conduit access holes align. Refer to Figure 6C for mounting-screw hole locations inside the EVSE. Do not fully tighten the screws.
2. Using a level, ensure the EVSE is level and plumb on all sides. Securely tighten all mounting screws.
3. Repeat the installation process in steps 2 and 3 for the other EVSE on the opposite side of the pole, if applicable.
4. Pass the wiring coming up through the center of the pole through the appropriate conduit access holes in the pole and EVSE(s).
 - a. Inside the access cutout hole, locate the ground bar. Attach the ground cable originating from the breaker panel to this ground bar, and then add a ground wire between it and the ground bar inside the 3704. See Figure 7A.

See the *Wiring the EVSE* section for connections.

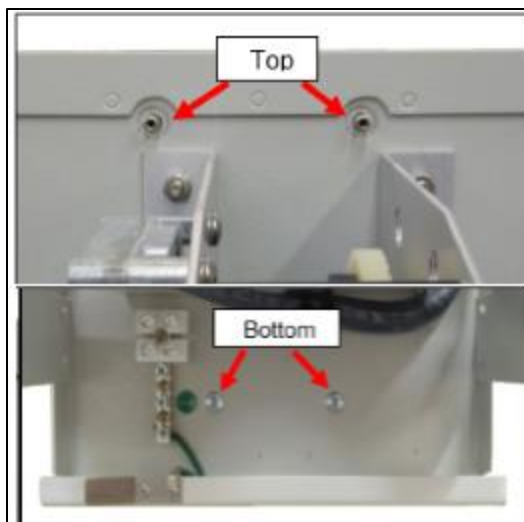


Figure 6C

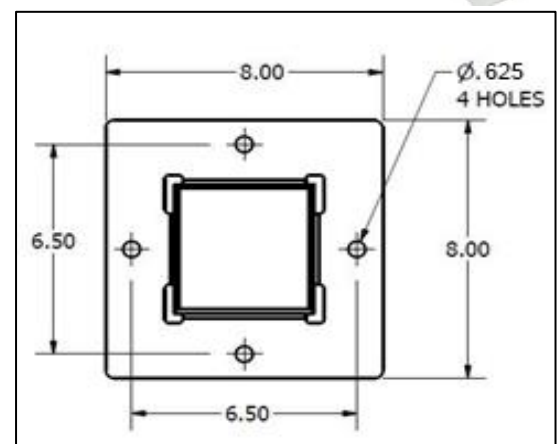
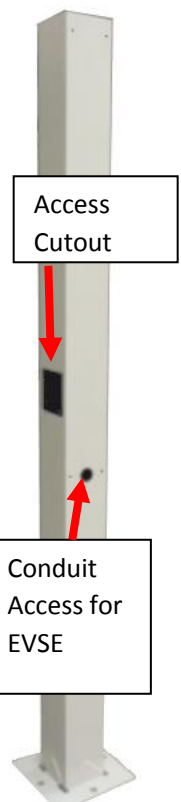


Figure 6B



Wiring the EVSE for Power

EVSE Red and Black wires from the service panel enter the EVSE through the conduit access hole at the bottom, and are connected to the Terminal Block (Figure 7A).

Red and Black wires are already attached on one side of the Terminal Block from the GFCI. Connect the corresponding wires from service panel to the opposite side of the Terminal Block. The incoming ground wire from the pole Ground Block just below the Terminal Block is attached to the EVSE Ground Block just below the Terminal Block. **Note:** The Terminal Block and Ground Bar can accommodate wires from 4-14 gage.

If wall-mounted versus pole-mounted, the wires from the service panel enter through a knock-out in the center of the bottom face of the rear panel. The Red and Black wires attach in the same way and the ground wire from the service panel attaches directly to the Ground Block in Figure 7A.

Torque the Red and Black wires to 16 in-lb. The ground wires should be torqued to 20 in-lb for 10 AWG wire and 25 in-lb for 8 AWG wire.

Note: Figure 7B contains wiring instructions for a single EVSE. If applicable, repeat steps for a second EVSE.

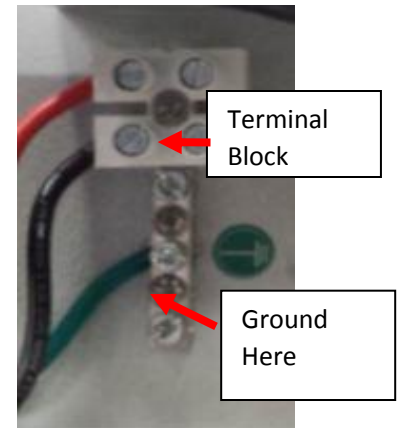


Figure 7A

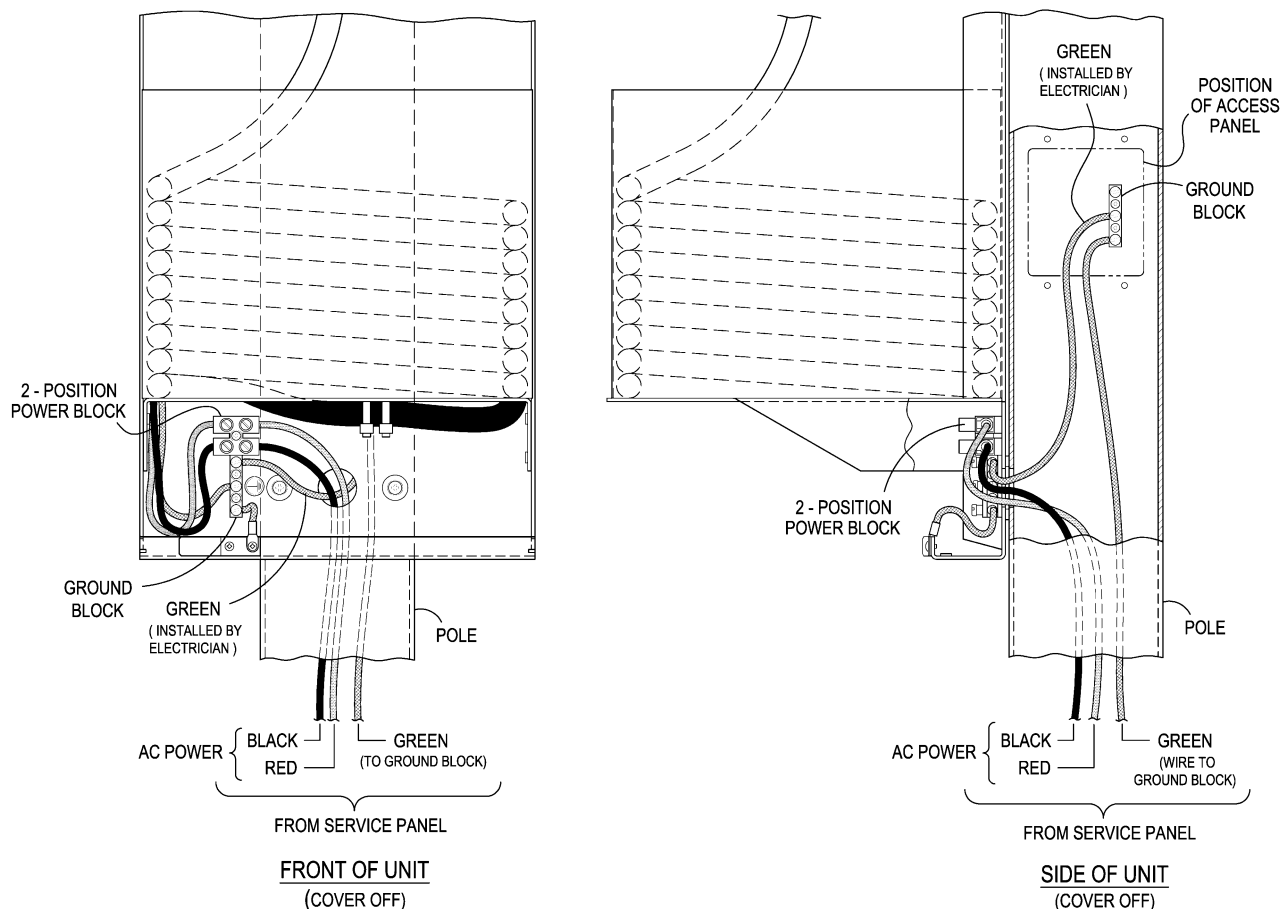


Figure 7B

Wiring the EVSE for Serial Connections

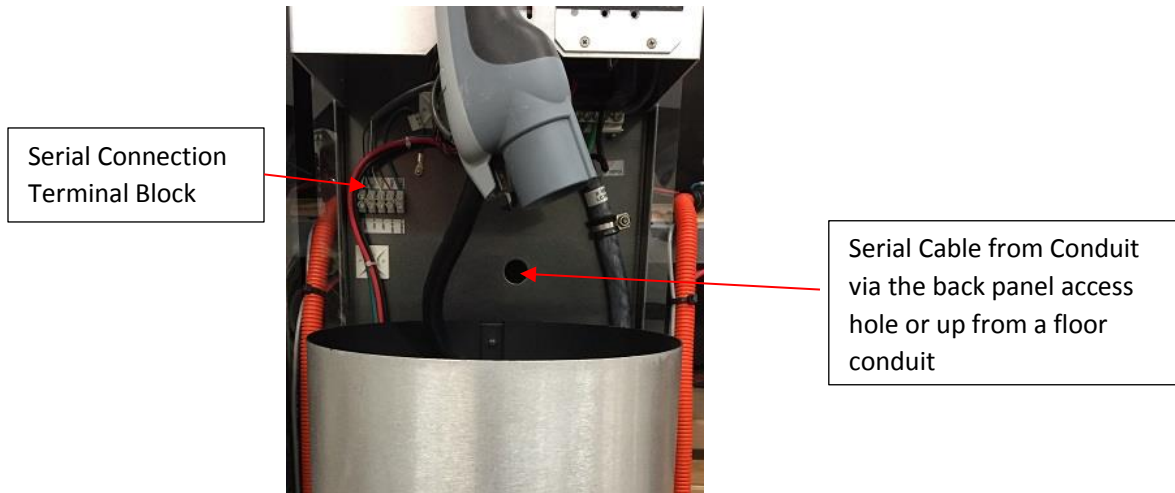


Figure 8

1. Feed the Module communication cables for EVSEs from the ground into the conduit inside the mounting pole. The cables will exit the conduit into the back of each 3704. For a wall-mounted 3704, feed the cable up from the access hole to the right of the Serial Connection Terminal Block (**Figure 8**).
2. Pull the Module communication cables carefully through the access hole so there is enough slack to work with.
3. Keeping in mind that the **right EVSE is # 1**, attach each individual wire of the Module communication cable to its corresponding, pre-wired counterpart in the 5-position Euro-Block (**Figure 9**).

Position	Function	Wire Color (As Depicted. Reference Only)
1	Shield	Shield/Drain
2	24 VDC	Red
3	XMIT (out to Module)	White
4	REC (in from Module)	Black
5	GND	Green

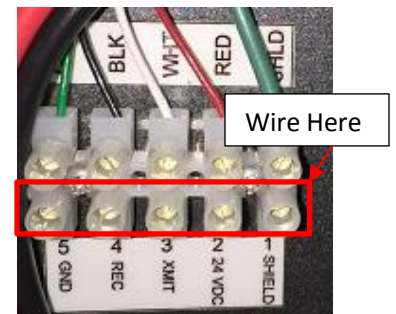


Figure 9

4. Repeat **Step 8** to wire **EVSE # 2's** Module communication cable to its corresponding, pre-wired counterpart in the 5-position Euro-Block.

Final Wiring Between Payment Module and EVSE:

Payment Module Wiring			EVSE Wiring	
Position	Function		Position	Function
1	24 VDC		1	Not Used
2	REC (in from EVSE)	←	2	24 VDC
3	XMIT (out to EVSE)	→	3	TXD / XMIT (out to Payment Module)
4	GND		4	RXD / REC (in from Payment Module)
5	SHIELD		5	Ground

Replacing the Cover

Replacing the cover involves the same steps, in opposite order, as removing the cover. However, pulling the J1772 cable out a little, to run it through the cover first, makes the job much easier.

1. To release a little cable for maneuvering, the power to the 3704 must be turned on. Press the **ON** button. This will allow the J1772 cable to be pulled out from its coiled position. (This assumes that the unit is not awaiting authorization from a payment module.) After releasing some cable, pull approximately 3 feet of cable out, and run the cable and connector through its access cutout in the front of the cover (**Figure 10A**).
2. If this 3704 is connected to a Payment Station, turn on the Payment Station and insert the test card that came with the Payment Module into the Payment Module card reader.
3. Use the Up and Down arrows to scroll to **EVSE Info** and press **Enter**.
4. Use the Up and Down arrows to scroll through the list of EVSEs connected to this Payment Module. Highlight this 3704 and press **Enter**.
5. The Payment Module sends a Charge message to this 3704. It will remain on for five minutes. You can now pull 3 feet of cable out.
6. Slide the cover on slightly above the EVSE, with the top pushed slightly farther on than the bottom, allowing the top tab of the cover enough room to slide over and behind the top lip of the EVSE frame (**Figure 10B**). Ensure the top of the front cover is clipped over and behind the top of the rear mount. Failure to do this will prevent the cover from being fully secure and might result in water intrusion to the EVSE. Ensure the bottom is pulled out enough so that the bottom tab of the cover is clear of the EVSE frame, and will slide over the bottom of the EVSE when the cover is pushed down.
7. Push the cover down from the top, ensuring the top cover tab slides outside of the EVSE frame.
8. Push the bottom of the cover on so the bottom cover's screw holes align with the EVSE's (Figure 4A).
9. Threading by hand, replace the two cover screws and washers removed earlier. Do not overtighten with power tools.



Figure 10A

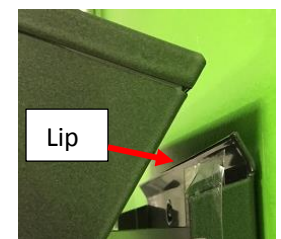


Figure 10B

Applying Operating Instructions

The 3704 is packaged with two labels that explain using the EVSE to the charging customer. Apply the appropriate label to the front cover (**Figures 10D, 10E, 10F**).

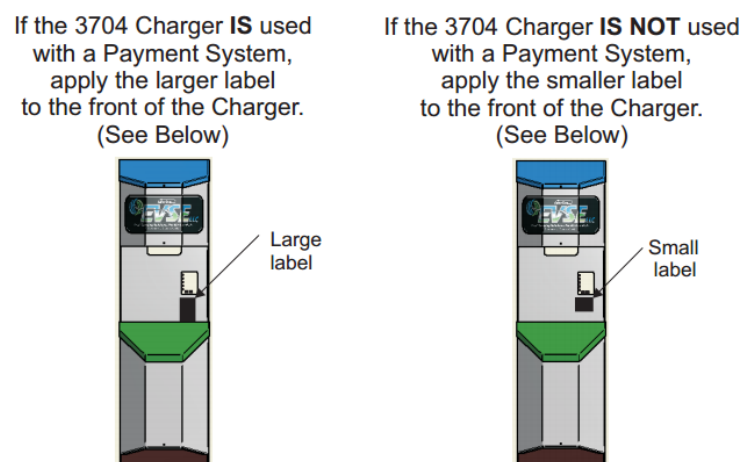


Figure 10D

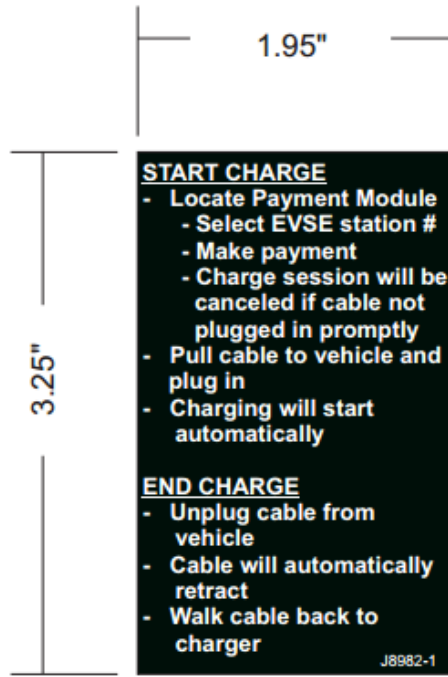


Figure 10E: With Payment Module

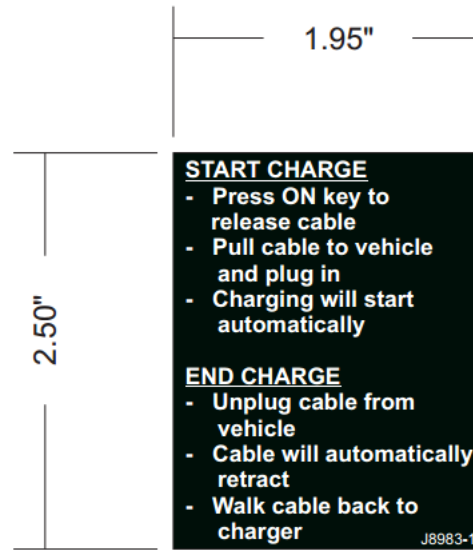


Figure 10F: Without Payment Module

Installation Notes

It is important to fill out the following information for your records for each charging location.

Circuit _____

Panel Location _____

Breaker Number _____

Breaker Rating _____

EVSE Station 1 Installer ID _____

Location _____ Company _____

Number _____ Name _____

IP Address _____ Tel. No. _____

Date installed M D YR

Circuit _____

Panel Location _____

Breaker Number _____

Breaker Rating _____

EVSE Station 2 Installer ID _____

Location _____ Company _____

Number _____ Name _____

IP Address _____ Tel. No. _____

Date installed M D YR

Circuit _____

Panel Location _____

Breaker Number _____

Breaker Rating _____

EVSE Station 3 Installer ID _____

Location _____ Company _____

Number _____ Name _____

IP Address _____ Tel. No. _____

Date installed M D YR

Circuit _____

Panel Location _____

Breaker Number _____

Breaker Rating _____

EVSE Station 4 Installer ID _____

Location _____ Company _____

Number _____ Name _____

IP Address _____ Tel. No. _____

Date installed M D YR

Options and Settings

Dip Switch Settings

Each Model 3704 is equipped with an 8-position dip switch on the GFCI (Figure 11), to personalize each installation.

For Switch 8, the 3704 is capable of power-sharing a single 40A or 50A breaker with another 3704. When power-sharing is used, a cable is connected between the two 3704s sharing the common breaker. The cable allows each 3704 to signal the other 3704 when it is actively charging to curtail its current output to 16A (40A Breaker) or 20A (50A Breaker).

Switch 7 sets the amount of time the user has to engage the J1772 connector after authorization. In the case where a payment module is not used and the 3704 “On” button is the actuation mechanism, the default “Open” setting of this switch allows the user one minute to engage the J1772 connector in the vehicle. In the situation where authorization via a payment module is required prior to the initiation of charging, the closed position for Switch 7 allows a 15 minutes timeout for the authorization. In other words, if the J1772 plug is not engaged in 15 minutes, a new authorization must be obtained. This allows the user time to walk from the payment module, which may be located some distance from the 3704, to the vehicle to plug in the connector.

Switch 3 puts the GFI into Test Mode for connecting to a Payment Module via a ZigBee network.

Switch 2 determines whether the proximity switch signal in the J1772 connector is utilized, upon disconnection from the vehicle, to initiate cable retraction. In the “Open,” default setting, the signal is ignored and the loss of the pilot signal initiates retraction. In the “Closed” position, the cable retraction is triggered solely by the removal of the connector from the vehicle as indicated by the proximity switch in the J1772 connector.

DIP SW1 allows selectable pull-in force: SW1 OPEN = ~15lbs., SW1 CLOSED (Default) = ~25lbs.

Switches 4, 5 and 6 are not currently used and are reserved for future applications.

SW8

- *Open 40A Breaker
- Closed 50A Breaker

SW7

- *Open Inactivity Timer Enabled, 1 Min
Also EVSE Activated by Local “On” Key (No Payment Module)
- Closed Inactivity Timer Enabled, 15 Min
Also EVSE Activated by Payment Module

SW2

- *Open J1772 Proximity Switch Ignored
- Closed J1772 Proximity Switch Used to Initiate Cable Retraction

SW1

- Open Selects standard retract pull-in force of ~15lbs
- *Closed Selects a higher retract pull-in force of ~25lbs

SW3

- *Open Not in Test Mode
- Closed Test Mode for adding to ZigBee Network

SW 4, 5, 6

For Future Use

*DEFAULT SETTINGS

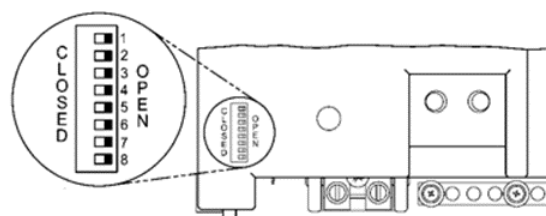


Figure 11

Remote Controls (External Control Input)

Remote controls are wired to an eight pin connector, marked External Control (J3).

A contact closure between pin numbers 1 and 2 will place the EVSE in standby mode, reducing the available power to the electric vehicle to 6 Amps.

A contact closure between pins number 3 and 4 will turn off power to the connected electric vehicle.

A 0 to 3.2vdc signal between pin 5 and pin 6 will signal the electric vehicle to reduce its charging current. This feature is compatible with Control Module Inc.'s Power Sharing Modules (Models 3741-002 and 3741-003).

A solid state closure to ground is provided on pin 8, when the electric vehicle signals the EVSE that an external fan is required. It is recommended that, when using these features, the optional I/O connector card (Model 3728-001) should be installed, making wiring easier.

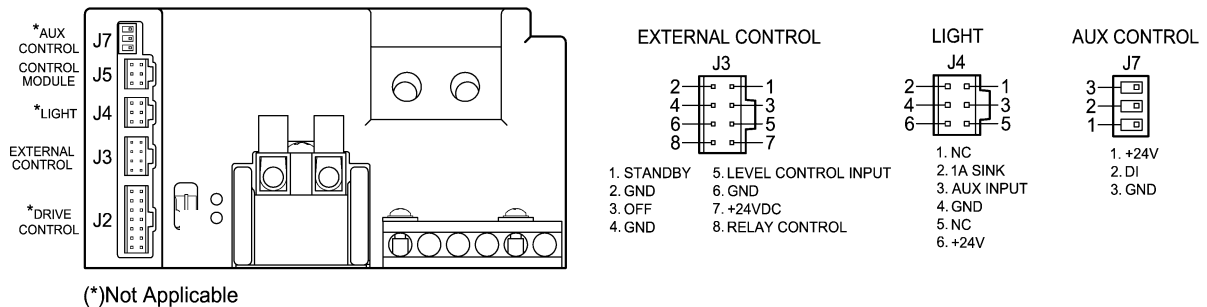


Figure 12

Operation

Note: The following operation assumes all steps with an attached or remote Payment Module have been completed. If your 3704 does not use a Payment Module, you will need to push the “On” button to release the cable prior to pulling it.

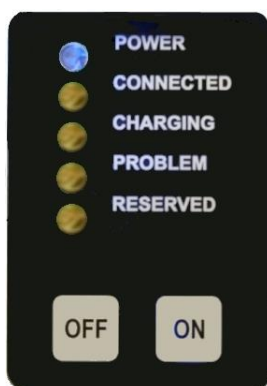
When you are ready to charge your Electric Vehicle’s battery:

1. Open the lid to your vehicle’s charging receptacle.
2. Observe the Control Panel on the front cover of the EVSE (Fig.13). You should observe that only the blue “Power” LED is lit.
3. Pull the charging cable from your Model 3704 and plug the J1772 connector into the charging receptacle in your electric vehicle. You should observe the amber “Connected” LED turn on briefly and the green “Charging” LED begin flashing. Your vehicle’s battery is now charging.
4. If in Simulated Level 1 Charge Mode(7A@208 and 240 VAC), both yellow and green LEDs will flash while charging.
5. The green “Charging” LED turns solid when the vehicle’s battery is fully charged. When charging is complete, disconnect the J1772 connector from the electric vehicle’s charging receptacle by pressing the button on top of the charging connector and then pulling out. Observe that the amber “Connected” LED remains off and the green “Charging” LED turns off. Only the blue “Power” LED remains on.
6. The cable will retract automatically when removed from the vehicle’s charging receptacle.

NOTE: If you remove the charging cable from the electric vehicle’s receptacle before the battery is fully charged, the charging process terminates, and the cable begins to retract. (Power is removed from the connector prior to its full removal from the receptacle as a safety precaution.) It is best to let the cable fully retract and restart the process rather than to restrain the cable during the retraction process. If the charge has been authorized through a payment module or gateway, removing the cable from the vehicle ends the session and requires a new authorization from the payment module or gateway.

NOTE: If you pull the charging cable while it is retracting, cable retraction will stop for safety reasons. The cable will make two additional attempts to retract, thereafter.

When power is applied to the electric vehicle, the Model 3704 monitors the current being drawn by the EV. Should the current exceed the maximum levels set by the breaker switches, the Model 3704 will disconnect the power from the EV and the red “Problem” LED will turn on. If there was a ground fault, the EVSE will attempt 3 closures after a short delay. There is no re-closure with an over-current trip.



Testing and Fault Modes

With the communications required between the EVSE and the electric vehicle, it is recommended that the installer use a Control Module Inc. Model 3840-001 hand-held tester. This will thoroughly check out the EVSE, before using an Electric Vehicle.

The primary Control Module used with the Model 3704 EVSE is the Status Indicator (Figure 10). This Control Module is tested and shipped with the EVSE, however it can be easily replaced in the field should the need arise. The primary function of the Control Module is to display its operational status. The unit is equipped with five status LEDs:

- Blue:** Indicates primary power is applied.
- Yellow:** When EVSE is ready to charge the car (having either pushed the “ON” button if controlled locally, or having been authorized if controlled by a payment module), it starts blinking indicating the cable is ready to be connected. Once plugged into the car, it shuts off.
- Green:** After plugging the J1772 connector into the car it starts blinking, indicating the car is charging. Once the car is fully charged, it turns on solid.
- Red:** Indicates a problem has occurred. (Refer to the Status Indicator Chart, on page 25).
- Orange:** When lit the EVSE has been reserved for use by another vehicle.

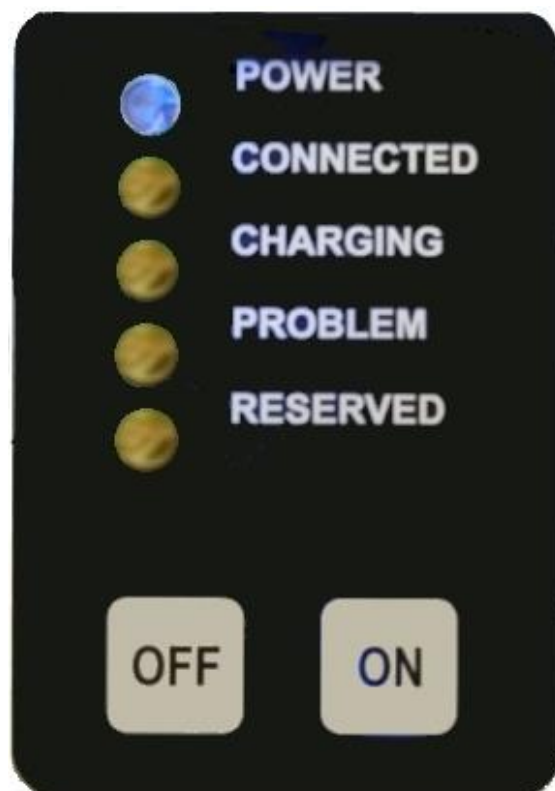


Figure 10

See the Status Indicator chart on the following page for complete status details.

Status Indicator Chart

		(Power)	(Connected)	(Charging)	(Problem)
NORMAL USE MODES:		BLUE	YELLOW	GREEN	RED
1	Line Voltage On	F/2	F/2	F/2	F/2
2	Self-Diagnostics Pass Line Voltage is between 208-240VAC Ground Connection Present	ON	X	X	X
3	Waiting to connect to EV	ON	SF	X	X
4	Cable is connected	ON	ON	X	X
5	Random start time activated – Charging begins in 2-5 minutes	ON	X	SF	X
6	Vehicle in charge mode (Level 2)	ON	X	FF	X
7	Vehicle charged	ON	X	ON	X
8	Cable is connected/standby mode (ext. contact) (Level 1 charge)	ON	SF	SF	X
9	Cable is connected/off mode (ext. contact)	ON	FF	FF	X
FAULT MODES:					
1	Ground wire is NOT connected	FF	X	X	ON
2	Line Voltage Is less than 208VAC	SF	X	X	SF
3	Clutch/Cable Motor Failure	X	SF	X	ON
4	GFCI Trip (reclosure in process)	SF	SF	X	SF
5	GFCI Trip	SF	SF	X	ON
6	GFCI Circuit Failure	SF	X	X	ON
7	Over Current Trip	FF	FF	X	ON
8	Stall Trip (reclosure in process)	ON	SF	X	SF
9	Stall Trip	ON	SF	X	ON
10	Pilot Problem	ON	ON	X	SF
11	Ventilation Required	ON	X	X	SF
12	Display Offline (comm. problem with sequencer)	FF	X	X	X
13	Load/No Load Voltage Differential Problem	X	X	X	FF
PROGRAM MODES:					
1	In Program Mode	SF <--	SF <--	SF <--	SF <--
2	Program Completed/program connector attached	ON	ON	ON	ON

Legend

F/2 = Flash once for 2 sec.
SF = Slow flash (1/sec)
FF = Fast flash (3/sec)

X = Led is off
<-- = In Sequence

User Maintenance

Perform the following preventative maintenance at least monthly:

- The J1772 connector should be checked for foreign matter; cleaned and dried with a mild detergent (safe for plastics), and then allowed to dry.
- The power cord and power connector should be inspected for wear and tear or cuts exposing wires.
- Report mechanical damage.

Moving, Transporting, and Storage



WARNING:

Ensure electrical power has been shut-off at the source before starting any electrical work.



AVERTISSEMENT:

Assurer l'alimentation électrique a été fermeture à la source avant de commencer les travaux d'électricité.

Should the 3704 EVSE have to be relocated, remove the unit in the reverse order that it was installed.

- Do not lift or carry the unit using the EV cable.
- Ensure all wiring is stored inside the housing.
- Bag all attaching hardware and secure on/in the unit.
- Store the unit in a dry, low humidity area.
- Protect the unit using appropriate packaging.

Customer Support

Should questions about installation, operation, optional features, maintenance or service arise, please call Technical Support at 1-888-753-8222 between the hours of 8:30 am to 5:00 pm EST, Monday to Friday.

Letter	Service Department Attn: Jack Batalha, Director Product Support Control Module Inc. 89 Phoenix Avenue Enfield, CT 06082
Fax	1-860-741-6064
E-mail	jbatalha@controlmod.com

Warranty

FOB Enfield, CT

EVSE proprietary hardware products are warranted to be free from defects in materials and workmanship for a period of 1 (one) year from the date of receipt of the product. Customer can report an Equipment defect to the Control Module Service Division by (a) telephone between 8:00 A.M. and 4:30 P.M. (EST), Monday through Friday, excluding Control Module holidays, or (b) through the support website.

Telephone number: 800-527-4998

Email address: service@controlmod.com

The foregoing warranty does NOT include:

- Furnishing supplies for, painting or refinishing the product
- Electrical work external to such product
- Installation, maintenance or removal of alterations, attachments or other devices not furnished by EVSE, LLC.
- Services which cannot be practicably performed due to alterations in or attachments to the product
- Services for accessories
- Repair or replacement of defective product to the extent the defect is attributable to:
 - Neglect or misuse (including use of the product for purposes other than that for which it was designed);
 - Transportation, vandalism or burglary of the product, acts of terrorism, accident or disaster, or other external causes (including water, wind, lightning and dust); or
 - Alterations to the product or servicing of the product by a third party.
- The foregoing warranty shall also not apply to the extent the defect in the product is due to the use of the product in conjunction with other products not manufactured by EVSE or to product from which the serial number has been altered, defaced or removed. This warranty extends only to the original purchaser of the product. It may not be assigned to any third party.

Disclaimer of All Other Warranties: THE WARRANTY SET FORTH ABOVE IS THE SOLE WARRANTY THAT EVSE PROVIDES WITH RESPECT TO THE EQUIPMENT. CUSTOMER ACKNOWLEDGES THAT CMI EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY, NON-INFRINGEMENT OR FITNESS FOR A PARTICULAR USE OR PURPOSE, OR ANY WARRANTY IMPLIED THROUGH COURSE OF CUSTOM OR USAGE OF TRADE.

Disclaimer of Liability: IN NO EVENT SHALL EVSE BE LIABLE TO CUSTOMER OR ANY THIRD PARTY CLAIMING THROUGH CUSTOMER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOSS OF EARNINGS, PROFIT OR GOODWILL OR COSTS OF COVER, IN EACH CASE RELATING TO THIS WARRANTY OR TO THE EQUIPMENT, EVEN IF SUCH DAMAGES WERE FORESEEABLE AND EVEN IF THIS WARRANTY FAILS OF ITS ESSENTIAL PURPOSE.

EVSE LLC

A Division of Control Module, Inc

89 Phoenix Ave., Enfield, CT 06082

Local Phone: 860.745.2433

Toll Free Phone: 800.722.6654

evse.controlmod.com