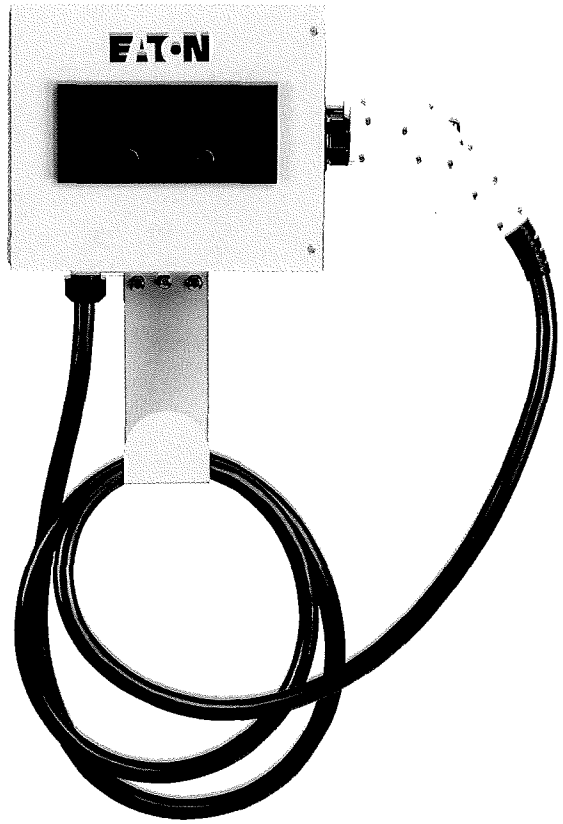
Instruction Manual **MN191003EN** Effective August 2013

# Installation and Service Manual Fleet AC Level 2 Electric Vehicle Supply Equipment (EVSE)




## Contents



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for Upgraded Charger, 220v 70amps

## 1. Important Safety Instructions - Please Read

**⚠ WARNING ELECTRICAL**

**THIS EQUIPMENT SHOULD BE INSTALLED, ADJUSTED, AND SERVICED BY QUALIFIED ELECTRICAL PERSONNEL FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THIS TYPE OF EQUIPMENT AND THE HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN DEATH OR SEVERE INJURY.**

**READ THIS MANUAL THOROUGHLY AND MAKE SURE YOU UNDERSTAND THE PROCEDURES BEFORE YOU ATTEMPT TO OPERATE THIS EQUIPMENT.**

**THE PURPOSE OF THIS MANUAL IS TO PROVIDE YOU WITH INFORMATION NECESSARY TO SAFELY OPERATE, MAINTAIN, AND TROUBLESHOOT THIS EQUIPMENT. KEEP THIS MANUAL FOR FUTURE REFERENCE.**

**DO NOT USE THIS PRODUCT IF THE EV CABLE IS FRAYED, HAS DAMAGED INSULATION OR ANY OTHER SIGN OF DAMAGE.**

**DO NOT USE THIS PRODUCT IF THE ENCLOSURE OR THE EV CONNECTOR IS BROKEN, CRACKED, OPEN, OR SHOW ANY OTHER INDICATION OF DAMAGE.**

**DO NOT USE THIS PRODUCT IF THE EV'S CHARGING COUPLER/INLET IS BROKEN/DAMAGED.**

**INTENDED FOR USE WITH PLUG-IN ELECTRIC VEHICLES ONLY.**

**PREMISE VENTILATION NOT REQUIRED.**

**THE INFORMATION CONTAINED IN THIS MANUAL IS SUBJECT TO CHANGE WITHOUT NOTICE.**

**DO NOT DRILL HOLES OR MODIFY ENCLOSURE SUCH THAT THE NEMA/IP RATINGS ARE COMPROMISED.**

## 2. Symbols and Definitions

**⚠ WARNING ELECTRICAL**

**THIS SYMBOL INDICATES HIGH VOLTAGE. IT CALLS YOUR ATTENTION TO ITEMS OR OPERATIONS THAT COULD BE DANGEROUS TO YOU AND OTHER PERSONS OPERATING THIS EQUIPMENT. READ THE MESSAGE AND FOLLOW THE INSTRUCTIONS CAREFULLY.**

**⚠ WARNING**

**INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, CAN RESULT IN SERIOUS INJURY OR DEATH.**

**⚠ CAUTION**

**INDICATES A POTENTIAL HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, CAN RESULT IN MINOR TO MODERATE INJURY, OR SERIOUS DAMAGE TO THE EQUIPMENT. THE SITUATION DESCRIBED IN THE CAUTION MAY, IF NOT AVOIDED, LEAD TO SERIOUS RESULTS. IMPORTANT SAFETY MEASURES ARE DESCRIBED IN CAUTION (AS WELL AS WARNING).**

**⚠ IMPORTANT**

**INDICATES A PARTICULAR ITEM OR INSTRUCTION THAT IS IMPORTANT TO CONSIDER.**

**Save These Instructions**

### Definitions

**AC** – Alternating Current. The type of power available in most buildings and on utility poles. The Fleet Level 2 EVSE protects Users and vehicles by allowing AC power to flow through it to the vehicle. The vehicle then converts the AC to DC (Direct Current) to charge the traction battery.

**ADA** – Americans with Disabilities ACT.

**ALC** – Available Line Current. The charger tells the vehicle through the J1772™ connector's pilot pin how much current (in amperes) it is allowed to pull on the circuit. This allows the vehicle to not exceed the circuit's maximum current rating.

**Disconnect Signal Redundancy** – Provides redundancy to the disconnect signal for quick response in ending higher energy charging applications. The redundancy feature quickly opens the EVSE contactor, removing energy transfer to the vehicle.

**EVSE** – Electric Vehicle Supply Equipment. EVSE is a general term used for all of the equipment used to supply electricity to the vehicle, such as the Eaton Fleet AC Level 2 EVSE.

**GFCI** – Ground Fault Current Interrupter. GFCI protects Users from faults involving leakage currents going to ground, rather than the proper return path of the circuit.

**J1772™** – The SAE Recommended Practice for conductive charging of hybrid and electric vehicles. This standard spells out the physical dimensions of the J1772 connector and the pilot communication between the plug-in vehicle and EVSE.

**Pilot** – The signal through the J1772 connector. This signal tells both the vehicle and the EVSE when both are ready to charge and how much current it is allowed to pull. This signal is a SAE standard.

**Plug Session** – The time while the EVSE is plugged into a vehicle. It starts by plugging in the J1772 connector and ends when unplugging the same connector.

**SAE** – Society of Automotive Engineers. The group that organizes and leads committees of transportation experts to create standards, such as J1772, for the transportation industry.

**TB** – The Terminal Block is where the incoming field power will be terminated in the EVSE unit.

**Traction Battery** – The large battery on a plug-in electric vehicle that is used to store and release energy for propulsion. This is different than the 12V battery that is used to start the vehicle initially and run accessories such as the radio.

**UI** – The User Interface part of the unit.

## 3. About the Fleet AC Level 2 EV Charging Station

Eaton's Fleet AC Level 2 charging station is Electric Vehicle Supply Equipment (EVSE) and is compatible with the Society of Automotive Engineers J1772™ standard for charging plug-in hybrid and all-electric vehicles.

The Fleet Level 2 EV Charging Station has several safety features:

- Protects Users with interlocked power – the cable and pins have no power on them until the connector is safely plugged into a vehicle.
- Protects Users from temporary faults – and automatically resets* so no User interaction is needed.
- Provides overcurrent protection and will trigger a temporary fault in the event a vehicle tries to draw too much current.
- Allows integration into authorization and management systems – keeping only authorized personnel able to use units and power usage levels to predefined levels.
- See section 'Specifications' for more details.

  * Automatic Reset feature must be enabled during installation – see page 8 for more information.

### Moving, Transporting and Storage Instructions

Store this unit indoors and in its original packaging until it is ready to be installed. Storage temperature should be between -30° and 80° C. When moving or lifting the unit, always grasp the unit enclosure. NEVER attempt to lift, move, or carry the unit by the EV cable.

Improper storage or handling may cause damage to the unit.

### Before You Begin

**⚠ WARNING ELECTRICAL**

**WARNING – ONLY QUALIFIED PERSONNEL FAMILIAR WITH THE OPERATION AND CONSTRUCTION OF THIS EQUIPMENT SHOULD INSTALL, ADJUST, MODIFY, AND SERVICE THIS EQUIPMENT. FAILURE TO FOLLOW THE INSTRUCTIONS COULD RESULT IN SEVERE BODILY INJURY OR DEATH.**

**⚠ IMPORTANT**

**THE USER IS RESPONSIBLE FOR CONFORMING TO ALL LOCAL AND NATIONAL ELECTRIC CODE® STANDARDS APPLICABLE IN THE ENVIRONMENT THAT THE EVSE IS BEING INSTALLED AND COMMISSIONED.**

Replacement Parts List

**Table 1. Replacement Parts List.**

| Part | Part Number |
|---|---|
| Protection and Control Board PCBA | Consult Factory |
| 70 A Cable / Connector Assembly | 91C5363G04* |
| Ribbon Cable for User Interface | 91C5361G01 |
| User Interface Unit | 91C5360G01 |
| Contactor 50A | 91C5362G10 |
| Contactor 70A | 91C5362G02 |

*consult with your local sales office to confirm availability

### ADA Standards for Accessible Design

It is very important to consider all STANDARDS FOR ACCESSIBLE DESIGN for Americans with Disabilities when choosing the location and placement of all Electric Vehicle Supply Equipment.

The Department of Justice has assembled an 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; and

2010 Standards for Public Accommodations and Commercial Facilities Title III.

For information about the ADA, including the revised 2010 ADA regulations, please visit the Department's website 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).

## 4. Installing the Electrical Service

### Checking the Electrical Requirements

The National Electric Code®, Article 625.21 states "Overcurrent protection for feeders and branch circuits supplying electric vehicle supply equipment shall be sized for continuous duty and shall have a rating of not less than 125 percent of the maximum load of the electric vehicle supply equipment." A load study of the location's electrical service may be needed to determine the availability of adequate electrical service. Take the nameplate amperage rating of the Fleet Level 2 EVSE, and multiply by 125% for the minimum upstream circuit protection needed.

Check your local jurisdictions for any other electrical requirements.

### Running the Wires

Once the proper electrical overcurrent devices have been installed, wires need to be run from it to the EVSE. For a typical installation, the only field wires will be for the incoming electrical service. The Fleet AC Level 2 EVSE operates on a single-phase service – two hots, and one ground.

**Note:** Use Copper Conductors ONLY.

**⚠ IMPORTANT**

- **THE 48A FLEET LEVEL 2 EVSE REQUIRES A DEDICATED 208/240 VAC 60A UPSTREAM BREAKER.**
- **THE 70A FLEET LEVEL 2 EVSE REQUIRES A DEDICATED 208/240VAC 90A UPSTREAM BREAKER.**

**Notes:**

**The End user is responsible for all Arc-Flash Hazard category information.**

**For units with circuit breaker 60A or greater, end user must install disconnect means consistent with NEC requirements - article 625.23 (USA) and CEC Part 1 Section 86 (Canada).**

**This EVSE is not suitable for location as identified in NEC article 500 (Classified Locations) and CEC Part 1 Section 86-102 (Hazardous Locations).**

**⚠ WARNING ELECTRICAL**

**WARNING – LOCKOUT/TAGOUT ALL ELECTRICAL SOURCE CIRCUITS FEEDING THE UNIT(S) IN THE OPEN POSITION BEFORE BEGINNING WIRING OR TERMINATIONS. FAILURE TO FOLLOW THE INSTRUCTIONS COULD RESULT IN SEVERE BODILY INJURY OR DEATH.**

**⚠ WARNING**

**THIS UNIT IS RATED FOR INDOOR OR OUTDOOR INSTALLATION. IF THIS UNIT IS MOUNTED OUTDOORS, THE HARDWARE FOR CONNECTING THE CONDUITS TO THE UNIT MUST BE RATED FOR OUTDOOR INSTALLATION AND BE INSTALLED PROPERLY TO MAINTAIN THE PROPER NEMA 3R RATING ON THE UNIT.**

**⚠ IMPORTANT**

**CONFIRM WITH THE LOCAL ELECTRICAL REQUIREMENTS FOR THE GAUGE, TEMPERATURE RATING, AND TYPE OF WIRE MATERIAL USED FOR THE OVERCURRENT RATING FOUND BELOW. THE CHART SHOWS A GENERAL RECOMMENDATION.**

**Table 2. Electrical Wire Chart**

| Style | Nameplate | Upstream Breaker Size | Suggested Wire Type | Suggested Wire Temp Rating |
|---|---|---|---|---|
| Fleet Level 2 | | | | |
| SNR3C | 48A | 60A | Copper | 75 degrees C |
| SNR3D | 70A | 90A | Copper | 75 degrees C |

## 5. Instructions for Opening Door

**⚠ WARNING**

**BEFORE OPENING THE FLEET LEVEL 2 EVSE INSURE THAT THE PROPER LOCK OUT TAG OUT PROCEDURE HAS BEEN PERFORMED ON THE UPSTREAM POWER TO THE UNIT.**

First ensure the power is off and the front monitor is blank as shown in **Figure 1** below. To open the Fleet Level 2 EVSE, locate the two latch screws indicated by the arrows in **Figure 1**. Remove these screws and open the box.

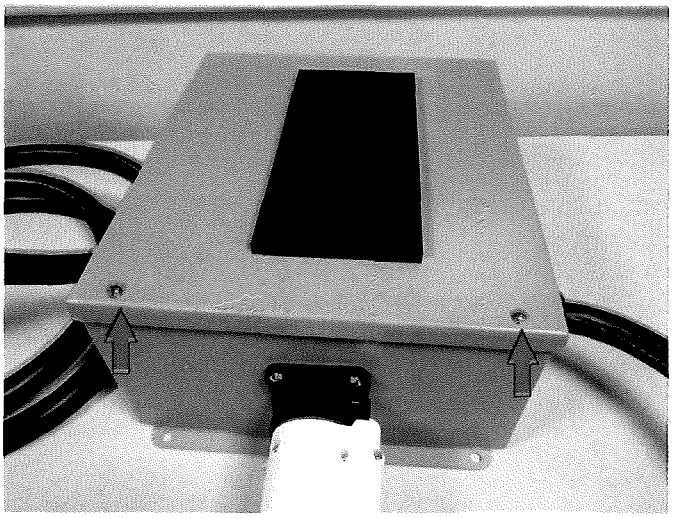

**Figure 1. Fleet Level 2 EVSE Door Screws.**

## 6. Installing to the Premise

**⚠ IMPORTANT**

**THINGS TO CONSIDER BEFORE CHOOSING A LOCATION TO MOUNT THE UNIT:**

1. **STANDARDS FOR ACCESSIBLE DESIGN.**
2. **CONSULTATION WITH AN ARCHITECT MAY BE NEEDED IN ORDER TO CONFORM TO ALL GOVERNING STANDARDS FOR LOCATION AND PLACEMENT OF ELECTRIC VEHICLE SUPPLY EQUIPMENT.**
3. **LOCATION OF AN AVAILABLE MOUNTING SUPPORT - THE WALL-MOUNT UNIT MUST BE ANCHORED INTO A MOUNTING SUPPORT STUD OR SOLID CONCRETE WALL, USING MOUNTING HARDWARE THAT IS APPROPRIATE FOR THE SURFACE ON WHICH YOU ARE MOUNTING. DO NOT MOUNT THIS UNIT TO A STUCCO/DRYWALL/ WALLBOARD.**
4. **LOCATION OF AN AVAILABLE ELECTRICAL SOURCE - POWER WIRES MUST BE RUN THROUGH AN APPROVED CONDUIT OR JACKET FROM THE CIRCUIT PANEL TO THE UNIT.**
5. **LOCATION OF THE VEHICLE'S CHARGING INLET WHILE PARKED -- THE UNIT MUST BE LOCATED SO ITS RESPECTIVE CABLE LENGTH IS CORRECTLY SIZED TO WHERE THE VEHICLE'S INLET IS ACCESSIBLE FOR PLUG-IN WITHOUT UNDUE MANEUVERING.**
6. **HEIGHT OF THE CONNECTOR DOCK MUST BE BETWEEN 24 AND 48 INCHES WHEN INSTALLED TO COMPLY WITH ADA AND NEC STANDARDS.**

### Mounting the Eaton Fleet EVSE

Once a proper site has been chosen and the electrical service has been run to the location, you can begin installation. The installation requires installing the Fleet Level 2 EVSE to a wall or a unistrut with cross braces.

**⚠ CAUTION**

**DO NOT MOUNT UNIT TO ONLY STUCCO/DRYWALL/WALLBOARD. DO NOT USE TOGGLE BOLTS, ZIP ANCHORS, NOR PLASTIC WALL ANCHORS MEANT FOR THESE MATERIALS BECAUSE THEY DO NOT HAVE THE STRENGTH NEEDED TO SUPPORT THE UNIT. THE UNIT MUST BE MOUNTED TO A SOLID SUPPORT SUCH AS: WOOD, CONCRETE WALL, CONCRETE BLOCK WALL, OR EQUIVALENT.**

#### Stud Mounting

Locate wooden stud that you wish to mount the Eaton Fleet EVSE to. Using 1/4-20" x 3" long lag screws, mount the EVSE using Stud mounting holes seen in **Figure 2**. Mount the EVSE securely to the stud using four 1/4-20 flange nuts.

#### Unistrut Mounting using a strut with cross braces

Use a single vertical strut with horizontal cross braces 14" apart. Mount the EVSE using 1/4-20 x 3" long lag screws and the four corner holes labeled unistrut mounting in **Figure 2**. Mount the EVSE securely to the cross braces using four 1/4-20 flange nuts.

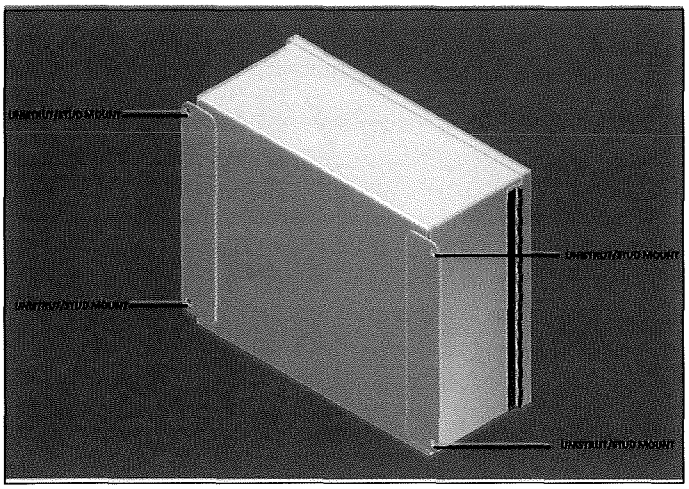

**Figure 2. EVSE Mounting**

### Mounting Cable Hanger

Using the two 1/4-20 Flange nuts (70222DAN09) provided with the cable hanger, mount the hanger securely to the wall using two 1/4-20 studs. (Stud placement is approximately 3.75" below EVSE mounting studs or cross braces).

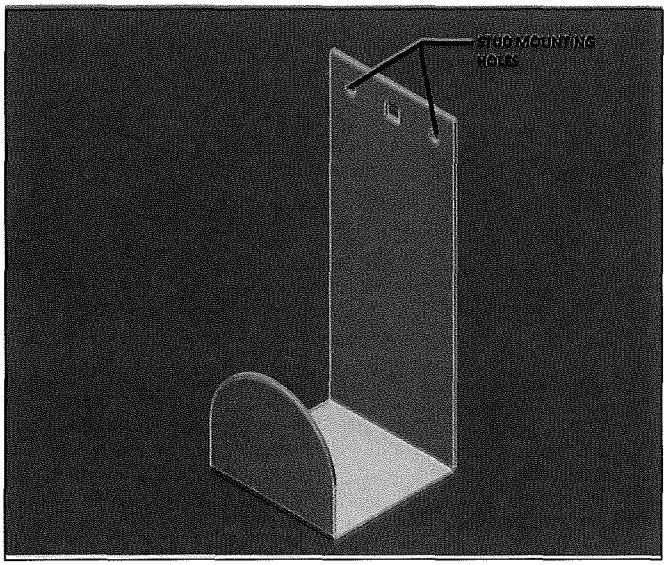


**Figure 3. Cable Hanger**

## 7. Termination and Configuration

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### Wire Terminations

For a typical installation, the only field wire terminations will be the incoming electrical service wires.

#### Electrical Service Wires

Terminate the incoming electrical service wires to the Fleet Level 2 EVSE's contactor and grounding bar,, following the designations for each wire; L1, L2, and G (see **Figure 4**).

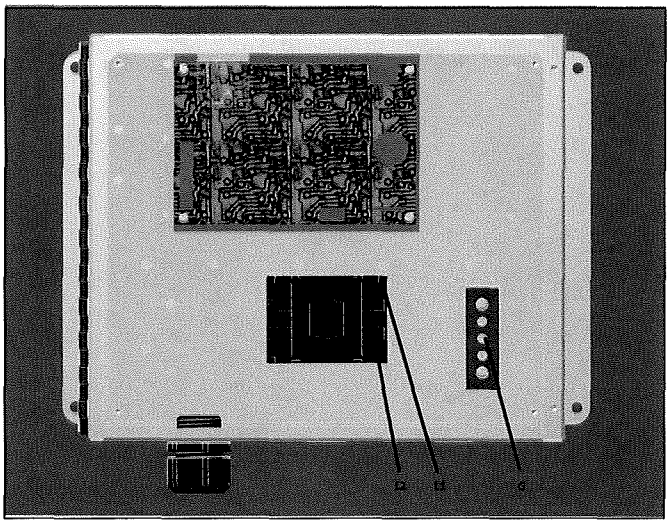
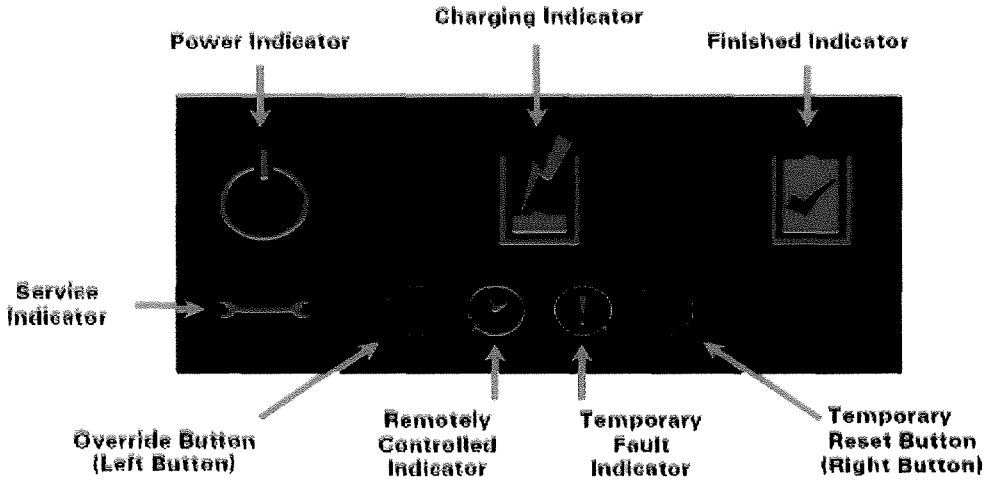



**Figure 4. Electrical Service Wiring.**

### Grounding Instructions

This product must be connected to a grounded, metal, permanent wiring system; or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal.

## 8. Confirming Installation and First Use




| ICON | ICON Status | |
|---|---|---|
| | Blink | Steady |
| | Payment / Authorization Needed | Unit Ready for Charge Session |
| | Vehicle Connected, EVSE Ready, Waiting on Vehicle | Vehicle Charging |
| | N/A | Vehicle Has Ended Charge (May begin again at anytime) |
| | Rate of Charge Contolled Remotely and Charging Set to INACTIVE | Rate of Charge Controlled Remotely and Charging ACTIVE |

**Figure 5. Status Indicators.**

**Step 1:** Ensure that the electrical service wires are landed according to this manual. Make sure the station access door is closed and locked.

**Step 2:** Power ON the Distribution Breaker.

**Step 3:** During initial EVSE boot-up, the User Interface will cycle all ICONs.

**Step 4:** After boot-up, the Power ICON will be STEADY. If this is not the case, please verify that all incoming service connections are landed appropriately and that the distribution breaker is in-tact. If the Power ICON still does not appear, please call technical support at 1-855-ETN-EVSE (1-855-386-3873).

**Step 5:** If a SAE J1772 Compliant Electric Vehicle is available, please connect the EV Connector to the Vehicle Inlet. You may also use an Eaton Vehicle Simulator, part number "EVSETESTB".

**Step 6:** The CHARGING INDICATOR will begin to blink.

**Step 7:** Almost immediately, the vehicle will engage a charge session (the contactor will close and power will be supplied to the vehicle).
See **Table 9**: Normal Operation User Interface Indicators, in the Appendix, for more details.

**Step 8:** When power is being supplied to the vehicle, the CHARGING INDICATOR will move from a BLINK status to STEADY status signifying that current is flowing to the vehicle.

**Step 9:** You may now remove the connector from the vehicle at your leisure.

### Ground Fault Test

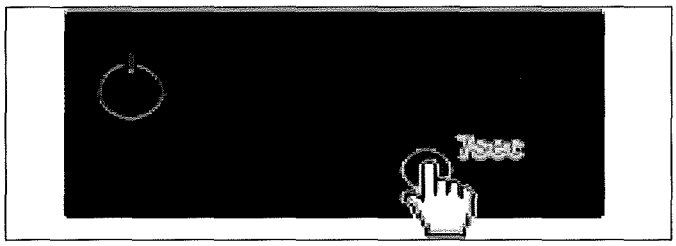



**Figure 6. Ground Fault Test.**

The ground fault detection feature is self tested every time the unit starts a plug session to charge a vehicle. A User can manually test the ground fault feature at any time by pressing and holding the Temporary reset Button (right button) for approximately seven seconds. If the test passed successfully, the fault light will flash once. If it detects a problem, the power icon will turn off and the service light (wrench icon) will have a medium single blink until power is cycled to the unit. See **Table 10:** EVSE Fault or Error User Interface Indicators, in the Troubleshooting Section in the Appendix, for more details.

There are two types of Reset, the Temporary Fault Reset and Service Reset. The Temporary Reset is used when the vehicle experiences a temporary fault and the user can press the right membrane push button on the interface to reset. This can be performed 5 times before the station will lock out and report a failure. The Service Reset can be performed when the EVSE as a system needs to be rebooted and a reset of power is not possible. This can be performed by simultaneously holding down both membrane push buttons (labeled in **Figure 5** as Override Button and Temporary Reset Button) on the interface for approximately seven to ten seconds.

### Automatic Reset Feature

From the factory, the EVSE is set to automatically reset after a temporary fault. The User has to manually disable the automatic reset feature if desired.

The EVSE will automatically reset a limit of 5 times before the user is locked out.

### Power Up Delay Feature

There is a "Power Up Delay" that is a random amount of time between 3 and 8 minutes for units that are plugged into vehicles after a power outage. This ensures Charging Sessions are started at different times across your fleet.

### Dip Switch Settings

**⚠ CAUTION**

**MODIFYING THE DIP SWITCH CONFIGURATION OF THE UNIT COULD CAUSE THE UNIT NOT TO OPERATE AS DESIRED. PLEASE ONLY MODIFY DIP SWITCH SETTINGS IF YOU ABSOLUTELY UNDERSTAND THE IMPACT TO THE UNIT.**

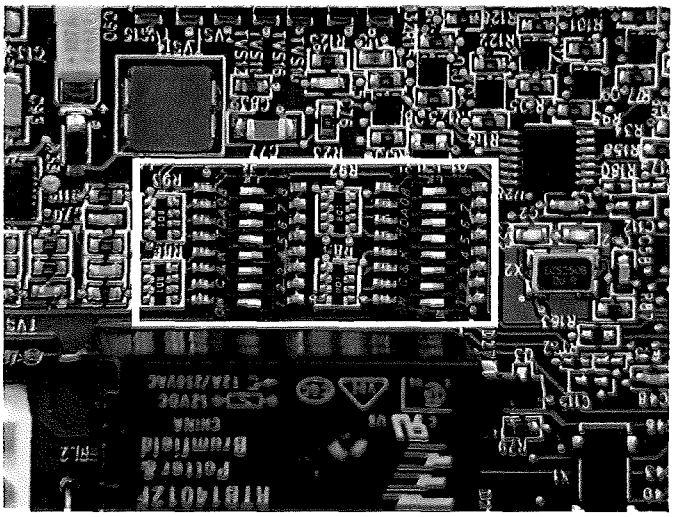


**Figure 7. Enabling/Disabling Automatic Reset.**

During installation, the Automatic Reset setting can be either left enabled as it came from the factory, or the User can decide to disable the feature. To enable or disable this feature, a Service Technician must change the position of a dip switch on the control board.

- To Enable Automatic Reset: Dip Switch Block SW2, Position 6 must be ON.
- To Disable Automatic Reset: Dip Switch Block SW2, Position 6 must be OFF.

For board replacements or basic confirmation of settings, Table 3 contains the explanation of the dip switch settings found in the corner of the Eaton Protection and Control Board (EPCB) near the RS232 Serial port, labeled SW1 and SW2.

**Table 3. Dip Switch Settings.**

| Dip Switch Block | Dip Switch Position | Feature | ON | OFF | Description |
|---|---|---|---|---|---|
| SW2 | 1 | Voltage Configuration | US 120V | US 208/240V | Voltage Configuration of the Unit. For 120V Configuration - A Wire Jumper is included between L2 and N |
| SW2 | 2 | Operating Frequency | 60Hz | 50Hz | North America is 60Hz |
| SW2 | 3, 4, and 5 | Reserved for Factory Use | Reserved for Factory Use. | | |
| SW2 | 6 | Auto-reset after fault | Enabled | Disabled | Default in Disabled position. A vehicle fault must be reset manually – the owner can easily enable this feature via this dip switch. Doing so, will enable an auto-reclosure on a nuisance trip |
| SW2 | 7 | Soft Start | Default in OFF position. If ON, the EVSE will perform a ramp up of current to the Available Line Current (ALC) or Nameplate Rating over a 30 second time period. This is done through the SAE J1772 handshake with the vehicle by modifying the Duty Cycle on the Pilot Signal. | | |
| SW2 | 8 | Download | Default in OFF position, Used to install new firmware updates from the SD Card Slot. For more details, consult factory. | | |
| SW1 | 1 | Reserved for Factory | Default in OFF position | | |
| SW1 | 2 and 3 | RS485 Baud Rate | Defaults in ON position. See Baud Rate Dip Switch Table 4. | | |
| SW1 | 4, 5, 6, 7, and 8 | RS485 Address | Defaults in OFF except for Position 8, i.e. 0x01. Range 0x00 to 0x1F using binary addressing (Most Significant Bit being SW1- Position 4). . | | |

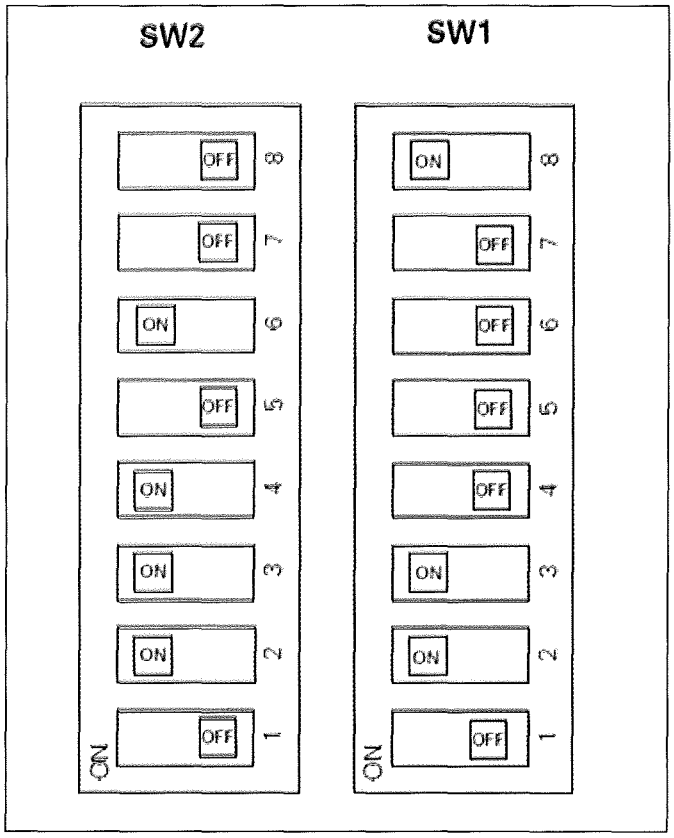



**Figure 8. Dip Switch Settings for a 208/240V, 60Hz, 70A Fleet Level 2 EVSE with Auto-reset Enabled.**

**Table 4. RS485 Baud Rate Dip Switch Table**

| Baud Rate | SW1 – Position 2 | SW1 – Position 3 |
|---|---|---|
| 9600 | OFF | OFF |
| 19200 | OFF | ON |
| 38400 | ON | OFF |
| 115200 | ON | ON |

## 9. Specifications

The Eaton Fleet AC Level 2 EVSE is compliant with the following standards:

- Society of Automotive Engineers (SAE) J1772™ EV Conductive Charge Coupler and Station.
- UL 2231 Personnel Protection Systems for EV Charging Circuits.
- UL 2594 EV Supply Equipment (Outline of Investigation).
- UL 1998 Software in Programmable Components.
- FCC compliant, Part 15.
- Canadian Standard Association (CSA) C22.2.107.1

**Table 5. Electrical and Mechanical Specifications.**

| Description | 48A | 70A |
|---|---|---|
| Incoming Voltage | 208/240 VAC<br>Line 1, Line 2, Earth Ground | |
| Input Frequency | 50/60Hz | |
| Upstream Breaker Size | 60 A | 90 A |
| Output Voltage | Same as Incoming | |
| Output Frequency | Same as Incoming | |
| Output Amperage - Max Continuous | 48 A | 70A |
| Interlocked Power Output | Yes (randomized across a time range to stagger power up across deployments) | |
| Overcurrent Rating | Output Amperage + 5% | |
| Ground Fault Interruption | 20mA<br>(UL2231-1/UL2231-2 Personnel Protection) | |
| Automatic Reset after Nuisance Trip Feature | DIP switch selectable Enable/Disable (default Enabled) | |
| Randomized Restart On Power Failure (delay before charging resumes after a power failure) | Yes | |
| Mechanical Operations | 10,000 cycles (EV Connector, replaceable)<br>100,000 cycles (Contactor, replaceable) | |
| Incoming Modbus Connections Terminal Block Torque in in-lb (Nm) | 4.4 – 5.3 (.5 - .6) | |
| Packaged Weight in lb (kg) | 45 lbs. (20 kg) | |
| Unpackaged Weight in lb (kg) | 40 lbs. (18 kg) | |

**Table 6. DP Contactor Wire and Torque**

**Copper Only (Stranded or Solid)**

| Wire Guage Range | Torque Rating |
|---|---|
| 14-10 AWG | 35 lb-in |
| 8 AWG | 40 lb-in |
| 6-4 AWG | 45 lb-in |
| 3-2 AWG | 50 lb-in |

**Table 7. Physical and Environmental Specifications.**

| Description | Fleet Level 2 |
|---|---|
| Dimensions - H x W x D | 15.5" x 12.26" x 6.52"<br>(not including the cable hanger or strain relief) |
| Status Indicators | 6 LEDs: 'Power', 'Charging', 'Complete', 'Remotely Controlled', 'Temporary Fault', and 'Service' |
| Push Buttons | 2 Buttons: 'Override' and 'Temporary Reset' |
| Ingress Protection | IP14 |
| Type Rating | 3R |
| Temperature – Operating | -30 to 50 degrees Celsius |
| Temperature – Storage | -40 to 70 degrees Celsius |
| Humidity | 90% RH, non-condensing |

**Table 8. I/O Specifications.**

| Description | Fleet Level 2 |
|---|---|
| J1772™ Pistol Grip EV Connector | Same as Output Rating |
| Permissive Run Contact | NC dry contact input |
| Available Line Current Control | 4 – 20mA analog input |
| RS-485 | Modbus-RTU 4-wire port |
| Memory | SD Memory Slot |
| Ethernet | Modbus TCP* |
| Field Diagnostics and Upgrade Port | RS-232 DB9 (HyperTerminalTM Support) |

* Optional

## Appendix

**Table 9. EVSE Normal Operation User Interface Indicators**

| EVSE Normal Operation User Interface Indicators | | |
|---|---|---|
| **Interface Snap Shot** | **EVSE Meaning** | |
| | **Definition** | **Action Required** |
|  Steady | Unit is Ready for Use | Remove EV Connector from EVSE and Mate to your Electric Vehicle. Plug-In to Vehicle to Begin Charge Session |
|  Single Blink | Authorization is required | A) If the EVSE has a RFID reader, please present your keyfob or other credential to activate. B) Otherwise proceed to process payment via Credit Card Payment System on the front of the unit. After payment is rendered, EVSE will activate and Power ICON |
|  Steady  Single Blink | Vehicle Connected, EVSE Ready, Waiting on Vehicle | None - Waiting on Vehicle to Begin Charging. If vehicle does not begin charging momentarily, please check internal scheduling system or remove and re-insert EV Connector |
|  Steady  Steady | Vehicle Connected and Vehicle Charging | Wait for Full Charge or Disconnect When you are Ready to Leave |
|  Steady  Single Blink  Single Blink | Vehicle Connected and Charging is Remotely Controlled by Building Management System - Charging Set to INACTIVE | You can now walk away from the unit. Charging will begin with Building Management System Allows.<br><br>Depending on Facility Setup, Local Override may be available by pushing the "Override Pushbutton" |
|  Steady  Single Blink  Steady | Vehicle Connected and Charging is Remotely Controlled by Building Management System - Charging Set to ACTIVE but at a reduced level. | You can now walk away from the unit. Charging will begin when Vehicle Engages Charge Session.<br><br>Depending on Facility Setup, Local Override may be available by pushing the "Override Pushbutton" This will request to charge at full capacity. |
|  Steady  Single Blink  Steady | Vehicle Connected and Current Charge Session is Complete. | At anytime, you may remove the EV Connector and Re-Dock it to the EVSE. If the vehicle wants to engage a charging again at a later time while you are away, it may do so at anytime. No additional activity is required by you. |
|  Steady  Single Blink  Steady | Vehicle Connected and Current Charge Session is Complete. | At anytime, you may remove the EV Connector and Re-Dock it to the EVSE. If the vehicle wants to engage charging again at a later time while you are away, it may do so at anytime. No additional activity is required by you. |

**Table 10. EVSE Fault or Error User Interface Indicators**

| EVSE Fault or Error User Interface Indicators | | |
|---|---|---|
|  Will present itself in a blink pattern or a steady icon. Typically an internal EVSE Concern |  Will present itself in a blink pattern or a steady icon. Typically is a vehicle related concern. Eaton defines this as a Temporary Fault or in rare occurances a Nuiscance Trip. |  In all Errors/Faults, the Power ICON will be ON or Blinking. On a few of the Errors the Charging ICON will BLINK to describe the specific Error. |
| **Icon Pattern** | **Fault/Error Desciption** | **Recommendation / Action** |
|  Steady  Fast Double Blink | SAE J1772 Concern<br><br>Rarely Occurs: Vehicle Nuiscance Trip<br>Continually Occurs: Vehicle SAE J1772 Compatibility Concern | - Use reset option to Clear Error*.<br>- If AutoReclosure is ENABLED, the EVSE will auto clear this error after 15 minutes.<br>- Starting a new Plug Session will also clear the error. A new Plug Session is defined as removing the EV Connector from the Vehicle Inlet and re-inserting it into the Vehicle Inlet. |
|  Steady  Slow Single Blink  Fast Double Blink | SAE J1772 Concern<br><br>Rarely Occurs: Vehicle Nuiscance Trip<br>Continually Occurs: Vehicle SAE J1772 Compatibility Concern | - Use Service Reset or Temporary Fault Reset..<br><br>- Starting a new Plug Session will also clear the error. A new Plug Session is defined as removing the EV Connector from the Vehicle Inlet and re-inserting it into the Vehicle Inlet. |
|  Steady  Slow Single Blink  Steady | Ground Fault Concern<br><br>Rarely Occurs: Vehicle Nuiscance Trip<br>Continually Occurs: Ground/Leakage Current Detection | - Use reset option to Clear Error*.<br><br>- Starting a new Plug Session will also clear the error. A new Plug Session is defined as removing the EV Connector from the Vehicle Inlet and re-inserting it into the Vehicle Inlet. |
|  Steady  Slow Single Blink  Slow Single Blink | Vehicle Tried to Pull more Power the the EVSE has instructed it to pull.<br><br>Rarely Occurs: Vehicle Nuiscance Trip<br>Continually Occurs: Vehicle SAE J1772 Compatibility Concern | - Use reset option to Clear Error*.<br><br>- Starting a new Plug Session will also clear the error. A new Plug Session is defined as removing the EV Connector from the Vehicle Inlet and re-inserting it into the Vehicle Inlet. |
|  Steady  Medium Blink | Max Temporary Faults for One Plug Session<br><br>If this occurs, 5 vehicle related concerns happened during 1 Plug Session. A Plug Session is defined as the moment the user plugs the EV Connector into his/her vehicle inlet and then removes it. | Starting a new Plug Session will clear the error. A new Plug Session is defined as removing the EV Connector from the Vehicle Inlet and re-inserting it into the Vehicle Inlet. |
|  Steady  Assymetric Double Blink | GF Test Failure Prior to Engaging Charge Session | Call Technical Support - 1-855-ETN-EVSE |
|  Steady  Steady | Contactor Failure | - Ensure that the Incoming Electrical Wires are Landed according to the Installation Manual.<br>- the EVSE Requires an L1, L2, and Ground.<br>- Please consult the Installation Guide for further details. |
|  Steady  Slow Single Blink | The occurance of Vehicle Related Errors have reached a maxium. The unit is temporarily disabled so that an investigation can be done. | Call Technical Support - 1-855-ETN-EVSE |
|  Steady  Very Fast Blink | Unit is locked out and not operable | Call Technical Support - 1-855-ETN-EVSE |
|  Steady  Asymmetric Double Blink | Unit is locked out and not operable | Call Technical Support - 1-855-ETN-EVSE |

* The user interface will go through a startup mode which initiates a self-check by momentarily testing each icon before returning to a solid Power Ready LED.

**Notes:**

**Markings:**

The physical unit must comply with NEC 625.15 (USA) and CEC Part 1 Section 86 (Canada).

A. "For use with Electric Vehicles"
B. "Ventilation Not Required"

Instruction Manual MN191003EN
Effective August 2013

# Installation and Service Manual
# Fleet AC Level 2 Electric Vehicle Supply Equipment (EVSE)

For more information,
visit **www.eaton.com/plugin**,
call 1-855-ETN-EVSE (1-855-386-3873),
or call your local Eaton sales office.

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