

SECTION 26 33 43
COMMERCIAL ELECTRIC VEHICLE SUPPLY EQUIPMENT – LEVEL 2 AC 48A

PART 1 - GENERAL

1.1 SCOPE

- A. The requirements of the Contract, Division 26 applies to work in this section. Electric vehicle supply equipment (EVSE) called VersiCharge™ AC as Specified and as shown on the contract drawings shall be furnished and installed by the Contractor.

1.2 RELATED DOCUMENTS

- A. *[Related Sections include the following:*
1. *[Section 26 28 16 – Molded Case Breakers]*
 2. *[Section 26 43 13 – Surge Protection Devices for Low-Voltage Electrical Power Circuits]*
 1. *[Section 26 24 16 – Panelboards]]*

1.3 SUBMITTALS

- A. For review:
1. The following information shall be submitted to the Engineer:
 - a. Product data sheets
 - b. Installation Manuals
- B. For construction:
1. The following information shall be submitted for record purposes:
 - a. Final as-built drawings
 - b. Wiring diagrams
- C. Installation information including equipment anchorage provisions. The manufacturer shall provide final, as- built drawings, recording the actual circuiting of panels. Installation, Operation and Maintenance manuals shall be supplied.

1.4 RELATED STANDARDS

- A. The electric vehicle supply equipment (EVSE) and all components shall be designed, manufactured and tested in accordance with the latest version of the following standards (unless otherwise noted):
1. SAE J1772, Electric Vehicle Conductive Charge Coupler
 2. SAE J2836, Use Cases for Communication Between Plug-in Vehicles and the Utility Grid
 3. SAE J2847, Communication between Plug-in Vehicles and the Utility Grid
 4. SAE J2931, Digital Communications for Plug-in Electric Vehicles
 5. National Electric Code Article 625, Electric Vehicle Charging System
 6. UL 1998, Software in Programmable Components
 7. UL 2231-1, Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits / CSA C22.2 No. 281.1/NMX-J-688-1
 8. UL 2251, Couplers for Electric Vehicles / CSA C22.2 No.282/NMX-J-678-ANCE
 9. UL 2594, Electric Vehicle Supply Equipment / CAS C22.2 No. 280/NMX-J-677-ANCE
 10. UL 991, Safety-Related Controls
 11. FCC Part 15.247, 15B and 15C, Class A QUALITY ASSURANCE
 12. Open Charge Point Protocol (OCPP) 1.6 or higher
 13. Energy Star Version 1.2
 14. NTEP
- B. Products shall be listed by Underwriters Laboratories, Inc.

1.5 QUALITY ASSURANCE

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VersiCharge 48A Commercial

- A. The manufacturer shall have been manufacturing EVSE or similar transportation electrification equipment for a minimum of ten years.
- B. The EVSE shall manufacture “Make Ready” electrical infrastructure equipment to provide an integrated EV solution.

1.6 DELIVERY, STORAGE AND HANDLING

- A. The EVSE manufacture shall stock the Level 2 chargers in the United States to facilitate fast and easy deliveries to the job site.
- B. If EVSE is being stored prior to installation, then the EVSE shall be stored so as to maintain the equipment in a clean and dry condition as required by the manufacturer’s instructions, in accordance with manufacturer’s instructions (1) copy of these instructions shall be included with the equipment at time of shipment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. *[The Electric Vehicle Supply Equipment shall be Siemens or pre-approved equal. Approved manufacturers are as follows:*
 - 1. **SIEMENS eMobility]**
- B. Manufacturers listed above shall meet these specifications in their entirety. Products in compliance with the specification and manufactured by others not named shall be considered only if pre-approved by the Engineer ten (10) days prior to bid date.
- C. Manufacture shall provide at least two power output options; 9.6kW and 11.5kW
- D. Manufacture shall be able to upgrade chargers over the air (OTA).
- E. Commercial Non-cellular EVSE shall be able to network communications over Wi-Fi to a main (Commercial Cellular) unit with cellular communications.

2.2 COMMERCIAL CELLULAR CHARGER WITH CELLULAR PERFORMANCE REQUIREMENTS

- A. Ground Fault Protection: 20mA
- B. Input Power options: A dedicated power feed will be required for each charger. No “Sharing” or “Pairing” of power thus reducing the output of the charger.
 - 1. One 40A, 208/240-V ac, 50/60 Hz, single phase service (dedicated 50 A. 2 pole circuit breaker on a split phase system) for 9.6kW version.
 - 2. One 48A, 208/240-V ac, 50/60 Hz, single phase service (dedicated 60 A. 2 pole circuit breaker on a split phase system) for 11.5kW version.
- C. Voltage:
 - 1. Overvoltage: 267 V (Max 275V)
- D. Chargers shall utilize the following power plugs / direct wiring:
 - 1. 9.6kW/40A must use a 50A breaker and direct wiring
 - 2. 11.5kW /48A must use a 60A breaker and direct wiring
- E. EV Charging Levels:
 - 1. Single vehicle, AC Level 2 at up to 9.6 kW
 - 2. Single vehicle, AC Level 2 at up to 11.5 kW
 - 3. Chargers shall have the ability to limit the max power that can be delivered by the charging station by means of a built-in mechanical feature to the following levels:
 - a. 12-amps
 - b. 16-amps
 - c. 24-amps
 - d. 32-amps
 - e. 40-amps

- f. 48-amps
- F. Physical Specifications
1. Enclosure Construction and Finish
 - a. Enclosure shall be rated NEMA 4 to withstand severe weather requirements.
 - b. Enclosure shall be rated IK 08 to withstand physical impacts.
 - c. Enclosure and support materials shall be comprised of materials suitable for their application.
 - d. Enclosure shall have provisions for locking of unit and evidence of tamper.
 - e. Enclosure shall provide visual lighting to provide easy viewing of the EVSE status.
 2. Enclosure Mounting
 - a. Enclosure shall come with a wall mount mounting adapter as standard.
 - b. EV post mounting options shall be available for 1 or 2 chargers.
 3. Cable Length – 20 feet or 25 feet
 4. Connector and Cable Management
 - a. The EVSE shall include a cable holster incorporate into the charger unit.
 - b. The EVSE shall have the option for a cord management system for any post configurations to comply with ADA and NEC articles 625 as it applies to cord management systems.
 - c. The EVSE post supports single or dual charger mounting, includes a counterweight cable retraction system and is 72 inches tall.
 - d. The EVSE can be mounted in a single or dual (back-to-back) configuration on a 48-inch-tall pedestal.
 - e. The EVSE shall include a dock for inserting the SAE J1772 connector when not in use.
- G. Environmental
1. Operating Temperature
 - a. -22° F (-30° C) to 122° F (50° C)
 2. Humidity
 - a. 98% relative humidity, non-condensing
 3. Corrosion Resistance
 - a. The enclosure coating shall have corrosion resistance.
 - b. The printed circuit boards (PCB's) integral to the EVSE shall be conformal coated.
 4. Operating altitude
 - a. 6,562 ft
- H. User Interface
1. The station's display shall be simple universal symbols to allow easy understanding and use of the EVSE.
 2. The EVSE shall include the following status indicators:
 - a. Power On
 - b. EV Connected
 - c. Charging in progress
 - d. Authentication function enabled or disabled
 - e. Charger Fault
 - f. Wi-Fi connection status
 3. The EVSE shall communicate the following statuses through the use of vertical RGB LEDs:
 - a. Power up sequence
 - b. Ready to charge
 - c. Charging status (charging, charging full, paused)
 - d. RFID Authentication and Card management
 - e. Error codes
 - f. Firmware updates and factory reset
- I. Protection
1. The EVSE shall provide integral ground fault protection of 20 mA.

2. The EVSE shall provide an automatic ground fault reset for non-instantaneous faults.
3. The EVSE shall incorporate an automatic ground fault detection feature at the beginning of each plug session.
4. The EVSE shall include an adjustable dial for limiting the maximum current delivered by the charging station.
5. The EVSE shall include a Cold Start feature to allow for randomized restart on power failure and/or delay before charging resumes after a power failure.

J. Input / Output

1. The EVSE shall include a low voltage I/O port that provides remote control indication.

K. Communications

1. The EVSE shall include the following open communication protocols to facilitate monitoring/control and allow remote firmware updates.
 - a. OCPP 1.6 or higher and shall be upgradable over the air to future versions.
 - b. Modbus RTU serial communications
 - c. Modbus TCP IP ethernet communications
2. The EV Charger shall have at least the following built-in communication options:
 - a. Wi-Fi
 - b. Serial RS-485
 - c. Ethernet (Copper)
 - d. Cellular
3. The EV Charger shall allow up to two communications methods at the same time.
4. The Cellular charger will communicate via Wi-Fi with up to one Wi-Fi Commercial Non-cellular charger and thus providing a SIM gateway to the cloud for the Commercial Non-cellular unit.
5. The EVSE shall include an embedded sub-meter for the accurate measurement and reporting of electricity delivered to the charging station.
6. The EVSE shall be HW-ready for ISO15118 Plug'n'Charge.

L. RFID

1. The EVSE shall include a built-in RFID reader and symbol on the cover.
2. The RFID shall support authentication notification and whitelist setup for additional RFID cards.

M. CLOUD APPLICATION

1. EVSE shall come with a FREE web application to allow user to setup, monitor, control and log information.
2. The cloud connection will allow for updates to the chargers' configuration to support new features, applications or new EV car communications.
3. A mobile App shall be supplied free of charge, compatible with iOS 14 or higher and Android 10 or higher.
4. App shall allow up to ten (10) chargers to be configured.
5. App shall offer features such as delayed charging, start/stop, viewing charging statistics.

2.3 NETWORK SOFTWARE

1. ***EVSE shall operate with RFID or FreeVend without a subscription to a 3rd party service.***
2. ***EVSE provider shall have a network software package to allow:***
 - a. ***monitoring***
 - b. ***demand control***
 - c. ***logging***
 - d. ***trending***
 - e. ***reporting***
 - f. ***alarms***
 - g. ***dashboard overview***
 - h. ***device setup and configuration***
 - i. ***ability to add any OCPP 1.6 or higher EVSE to the software.***
 - j. ***Network software shall not utilize proprietary protocols.***

3. *EVSE network software shall allow unlimited device counts.*
4. *EVSE network software shall include a HTML Web interface.*
5. *Billing reports, QR Code and RFID setup for billing shall be included.*
6. *Communications for billing will be via OCPP 1.6 or higher.]*

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All installation work shall be performed by a qualified person who is familiar with the installation, construction and operation of the equipment and the hazards involved.
- B. Install per manufacturer's recommendations and contract documents.
- C. Install units' plumb, level and rigid without distortion.
- D. Installation of the Station and Network shall follow the procedure in the published literature.
- E. The Contractor shall install all equipment per the manufacturer's recommendations and contract drawings.
- F. All necessary hardware to secure the assembly in place shall be provided by the Contractor.

3.2 ADJUSTMENTS AND CLEANING

- A. Remove debris from the Electric Vehicle Supply Equipment and wipe dust and dirt from all components.
- B. Repaint marred and scratched surfaces with touch up paint to match original finish.

3.3 TESTING

- A. Check tightness of all accessible mechanical and electrical connections to assure they are torqued to the minimum acceptable manufacturer's recommendations.
- B. Check all installed charging systems for proper grounding, fastening and alignment.
- C. Each EVSE shall undergo factory testing of all operational and protective features prior to shipment. No Onsite testing shall be required.

3.4 WARRANTY

- A. Equipment manufacturer warrants that all goods supplied are free of non-conformities in workmanship and materials for three (3) years from date of shipment.
- B. Changes or modifications to this product not authorized by the manufacturer shall void the warranty. The contractor shall contact the manufacturer to avoid non-compliant modifications.

3.5 OPERATIONS AND MAINTENANCE MANUALS

- A. Equipment operation and maintenance manuals shall be provided with each assembly shipped or supplied online using a quick scan QR code.

3.6 SERVICE

- A. EVSE shall offer a managed service if required by end user.
- B. EVSE shall offer on-site support for training, setup and configuration if required by end user.
- C. 24x7, level 1, technical support line via a 1-800 number shall be provided.
- D. Online technical support shall be provided.

END OF SECTION