

Government of India
Ministry of Power
Central Electricity Authority
NOTIFICATION

New Delhi, the----- 2018.

No. CEI/1/2/2018.— In exercise of the powers conferred by Sub-section (3) of section 177 read with section 53 of the said Act, the Central Electricity Authority hereby makes the following regulations, further to amend the Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2010, namely: -

1. **Short title and commencement:** - (1) These regulations may be called the Central Electricity Authority (Measures relating to Safety and Electric Supply) Third Amendment Regulations, 2018.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Central Electricity Authority (Measures relating to Safety and Electric Supply), Regulations 2010,-

a) In regulation 2, in sub-regulation (1) for clause (faa), (sa), (sb), (zwa) and clause (zxa), the following definitions shall be inserted, namely: -

‘(faa) “Charging Point” As defined in CEA (Technical Standard for Connectivity of Distribution Generation Sources) Regulations, 2013;’;

‘(fab) “Charging Stations” As defined in CEA (Technical Standard for Connectivity of Distribution Generation Sources) Regulations, 2013;’;

‘(sa) “Electrical Vehicles (EVs)” means any vehicle propelled, partly or wholly, by an electric motor drawing current from a rechargeable storage battery, or from other portable energy storage devices (rechargeable, using energy from a source off the vehicle such as a residential or public electricity service).;’;

‘(sb) “Electric Vehicle Supply Equipment EVSE (EVSE)” means conductors including the phase, neutral and protective earth conductors, the EV couplers, attachment plugs and all other accessories devices, power outlets, safety function equipment, or apparatus installed specifically for the purpose of delivering energy from the premises wiring to the EV and allowing communication between them if required;’;

‘(zwa) “Socket-Outlet” means an electrical device that is for fixing at a point where fixed wiring terminates; and provides a detachable connection with the pins of a plug; and has two or more contacts; and also includes a cord extension socket attached to a flexible cord that is permanently connected to installation wiring.;’;

‘(zxa) “Supply Lead” means a piece of equipment used to establish the connection between the EV and either a socket-outlet or a charging point. It is also called cable Assembly’.

- b) In the said regulations, after regulation 116, the following **regulation with new Chapter XI** shall be inserted, namely: -

Chapter XI

Safety Provisions for Electric Vehicle (EVs) Charging Stations

117. General safety requirement for electric vehicle charging stations:

- (1) All EV Charging Stations shall be designed, installed, tested, certified, inspected and connected in accordance with these provisions.
- (2) All EV Charging Stations shall be provided with protection against the overload of input supply and output supply fittings.
- (3) All EV Charging Points shall be installed so that any socket-outlet of supply is at least 800 mm above the finished ground level.
- (4) A cord extension set or second cable assembly shall not be used in addition to the cable assembly for the connection of the EV to the Electric Vehicle Charging Point. A cable assembly shall be so constructed so that it cannot be used as a cord extension set.
- (5) Adaptors shall not be used to connect a vehicle connector to a vehicle inlet.
- (6) EV parking place should be such that the connection on the vehicle when parked for charging shall be within 5 meter from the EV charging Point.

Note: maximum length of the supply lead is 5m.

- (7) Portable socket-outlets are not permitted to be used for EV charging.
- (8) Suitable lightning protection system shall be provided for the EVs charging stations as per IS/IEC 62305.
- (9) The EVs charging stations shall be equipped with a protective device against the uncontrolled reverse power flow from vehicle.
- (10) Disconnection of EV:** One second after having disconnected the EV from the supply (mains), the voltage between accessible conductive parts or any accessible conductive part and earth shall be less than or equal to 42.4 V peak (30 V rms) , or 60 V D.C., and the stored energy available shall be less than 20 J (as per IEC 60950). If the voltage is greater than 42.4 V peak (30 V rms) or 60 V D.C., or the energy is 20 J or more, a warning label shall be attached in an appropriate position on the charging stations.
- (11) Locking of the coupler:** A vehicle connector used for D.C. charging shall be locked on a vehicle inlet if the voltage is higher than 60 V D.C. The vehicle connector shall not be unlocked (if the locking mechanism is engaged) when hazardous voltage is detected through charging process including after the end of charging. In case of charging system malfunction, a means for safe disconnection may be provided.
- (12) Protection against overvoltage at the battery:** The D.C. EV charging point shall disconnect supply of electricity to prevent overvoltage at the battery, if output voltage exceeds maximum voltage limit sent by the vehicle.
- (13) Verification of Vehicle Connector Voltage-** The EV Charging Points shall not energize the charging cable when the vehicle connector is unlocked. The voltage at which the vehicle connector unlocks shall be lower than 60V.

118. Earth protection system for charging stations: -

- (1) All Residual Current Device (RCDs) for the protection of supplies for EVs shall have a residual operating current of not greater than 30 mA and shall operate to interrupt all live conductors, including the neutral. The RCD shall have a performance at least equal to Type A and be in conformity with IS 732-2018.
- (2) All RCDs used for the protection of supplies to EVs shall be permanently marked to identify their function and the location of the charging station or socket outlet they protect.
- (3) Each EV Charging Points shall be supplied individually by a dedicated final sub-circuit protected by an overcurrent protective device complying with IEC 60947-2, IEC 60947-6-2 or the IEC 60269 series. The overcurrent protective device shall be part of a switchboard.
- (4) Co-ordination of various protective devices shall be required.

- (5) Where required for service reasons, discrimination (selectivity) shall be maintained between the RCD protecting a connecting point and an RCD installed upstream.
- (6) All EV Charging Stations shall be supplied from a sub-circuit protected by a voltage independent RCD and also providing personal protection that is compatible with a charging supply for an electric vehicle.
- (7) All EV Charging Stations shall be provided with an earth continuity monitoring system that disconnects the supply in the event that the earthing connection to the vehicle becomes ineffective.
- (8) Earthing of all EV Charging Stations shall be TN system as per IS 732.
- (9) The cable may be fitted with an earth-connected metal shielding. The cable insulation shall be wear resistant and maintain flexibility over the full temperature range.
- (10) Detection of the electrical continuity by the protective conductor:** A protective earth conductor shall be provided to establish an equipotential connection between the earth terminal of the supply and the conductive parts of the vehicle. The protective conductor shall be of sufficient rating to satisfy the requirements of IEC 60364-5-54.

119. Requirement to prevent fire for EVs Charging Stations.-

- (1) Firefighting system for EVs Charging Stations shall be as per relevant provisions of CEA (Measures Relating to safety and Electric Supply) Regulations 2010 (as amended).
- (2) Enclosure of charging stations shall be made of fire retardant material with self-extinguishing property and free from Halogen.
- (3) Fire detection, alarm and control system shall be provided as per relevant IS.
- (4) Power supply cables used in Charging Station/ Charging Points shall conform to IEC 62893-1 and its relevant parts.

120. Testing of EVs charging stations:

- (1) All apparatus of EV Charging Points shall have the insulation resistance value as stipulated in the relevant IEC 61851-1.
- (2) Any testing as specified in the manufacturer's instructions for the RCD and the EV Charging Stations.

121. Maintenance of Records: -

- (1) To be tested/inspected by owner/ electrical Inspector/ CESE and keep records

that the EV charging station has been designed, constructed and labelled to be compatible with a supply of standard voltage at a nominal frequency of 50 Hertz;

- (2) Keep records of the relevant test certificate as indicated in these regulations and as per IEC 61851 standard.

122. Periodic maintenance and assessment of electric vehicle charging stations: -

- (1) An electric vehicle charging station owner shall arrange periodic test/ inspection of an EV charging station in every year in the initial period of first 3 years of establishment of a charging station and after that in every four years.
- (2) The owner/operator shall establish and implement a safety assessment programme for regularly assessing the electrical safety of EV Charging Stations.
- (3) The owner keeps records of the results of every periodic assessment and details of any issues found during the assessment; and any actions required to be taken in relation to those issues.
- (4) The owner shall retain a copy of all records, whether in hard copy or electronically, for at least seven years and shall provide a copy of the records to the inspecting officers.

123. International Standard for charging

stations: -

- (1) Safety provisions of all A.C. charging stations shall in accordance with IEC 61851-1, IEC 61851-21 and IEC 61851-22.
- (2) Safety provisions of all D.C. charging stations shall in accordance with IEC 61851-1, IEC 61851-21, IEC 61851-23 and IEC 61851-24
- (3) Where the connection point is installed outdoors, or in a damp location, the equipment shall have a degree of protection of at least IPX4 in accordance with IEC 60529.

[F. No.]

(P. C. Kureel)

Secretary, Central Electricity Authority

Note: The principal regulations were published in the Gazette of India, Extraordinary, Part III, section 4 *vide* notification No. CEI/1/59/CEA/EI dated the 20th September 2010 and subsequently first amended by notification No. CEI/1/2/2015 dated the 13th April 2015 published in the Gazette of India, Extraordinary, Part III, section 4 and the second amended by notification No. CEI/1/2/2018 dated the 1st March 2018 published in the Gazette of India, Extraordinary, Part III, section 4.

