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Thiruvananthapuram

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CIRCULAR

Subject: - Installation of Public EV charging station -guidelines issued –regarding

Reference: - Nil

For the effective implementation of Public EV charging station, the following guidelines are issued.

Guidelines for scrutiny / inspection of Public EV Charging Station (PEVCS)

(a) Technical

1. The minimum qualification for carrying out the installation work of a public EV charging system shall be a licensed B-Class Contractor issued by KSELB(Kerala State Electricity Licensing Board). Depending up on the capacity of the installation, eligible contractors can carry out the work.
2. All electric vehicle charging stations shall be provided with protection against the overload of input supply and output supply fittings.
3. The electric vehicle parking place shall be such that the connection on the vehicle when parked for charging shall be within five meters from the electric vehicle charging point/EVSE.
4. Suitable lightning protection system shall be provided for the electric vehicles charging stations as per Indian Standards Code IS/ IEC 62305.
5. All residual current device for the protection of supplies for electric vehicle shall,
 - (a) have a residual operating current of not greater than 30 mA;
 - (b) interrupt all live conductors, including the neutral; and
 - (c) have a performance at least equal to Type A and be in conformity with IS 12640.

Hence co-ordination of various protective devices shall be required. All electric vehicle charging stations shall be supplied from a sub-circuit protected by a voltage independent residual current device and also providing personal protection that is compatible with a charging supply for an electric vehicle.

6. Earthing of all electric vehicle charging stations shall be as per IS 3043:2018.
7. The cable may be fitted with an earth-connected metal shielding and the cable insulation shall be wear resistant and maintain flexibility over the full temperature range.
8. 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 which shall be of sufficient rating to satisfy the requirements of IEC 60364-5-54.
9. Fire detection, alarm and control system shall be provided as per relevant Indian Standards.

10. Power supply cables used in charging station or charging points shall conform to IEC 62893-1 and its relevant parts.
11. The safety provisions of all Alternating Current charging stations shall be in accordance with IEC 61851-1, IEC 61851-21 and IEC 61851-22.
12. The safety provisions of all Direct Current charging stations shall be in accordance with IEC 61851-1, IEC 61851-21, IEC 61851-23 and IEC 61851-24.
13. Where the connection point is installed outdoors, or in a damp location, the equipment shall have a degree of ingress protection of at least IPX4 (Ingress Protection Code) in accordance with IEC 60529.
14. Public Charging Infrastructure (PCI) – Requirements:
Every Public Charging Station (PCS) will have the following infrastructure:
 - (1) An exclusive transformer with all related substation equipment including safety appliance (If required).
 - (2) 33/11 kV line/cables with associated equipment including line termination etc (If required).
 - (3) Appropriate civil works.
 - (4) Appropriate cabling and electrical works ensuring safety.
 - (5) Adequate space for charging and entry/exit of vehicles.
 - (6) Public Charging Station shall have, one or more chargers or any combination of chargers from the table given below in one or more electric kiosk/boards:

| Charger Type | Sl.No. | Charger Connectors* | Rated Output Voltage(V) | No.of Connector guns (CG) | Charging Vehicle type (W-Wheeler) |
|----------------|--------|---|-------------------------|---------------------------|-----------------------------------|
| FAST | 1 | Combined Charging System (CCS)- min. 50kW | 200-750 or higher | 1CG | 4W |
| | 2 | CHArge de Move (CHAdeMO) – Min. 50kW | 200-500 or higher | 1CG | 4W |
| | 3 | Type-2 AC – Min. 22kW | 380-415 | 1CG | 4W,3W,2W |
| SLOW /MODERATE | 4 | Bharat DC-001 - Min. 15kW | 48 | 1CG | 4W,3W,2W |
| | 5 | Bharat DC-001 - Min. 15kW | 72 or higher | 1CG | 4W |
| | 6 | Bharat AC-001 - Min. 10kW | 230 | 3CG of 3.3 kW each | 4W,3W,2W |

*In addition, any other fast/slow/moderate charger as per approved BIS standards whenever notified.

Note: Type -2 AC (Min. 22 kW) is capable of charging e- 2W/3W the provision of an adapter

- (7) Charging stations for e-two/three wheelers shall be free to install any charger other than those specified above subject to compliance of technical & safety standards as laid down by Central Electricity Authority (CEA).
- (8) Tie up with at least one online Network Service Providers (NSPs) to enable advance remote/online booking of charging slots by EV owners. Such online information to EV owners should also include information regarding location, types and numbers of chargers installed/available, service charges for EV charging etc.
- (9) Share charging station data with the appropriate DISCOM and adhere to protocols as prescribed by CEA for this purpose. CEA, Central Nodal Agency (CNA) and State Nodal Agency (SNA) shall have access to this database.
15. Captive charging infrastructure for 100% internal use for a company's own/leased fleet for its own use will not be required to install chargers as per 14 and to have NSP tie ups.
16. Charging station may also be installed by Housing societies, Malls, Office complexes, Restaurants, Hotels, etc. with a provision to allow charging of visitor's vehicles which are permitted to come in its premises.
17. Public charging Infrastructure (PCI) for long range EVs and/or heavy duty EVs: Fast Charging Stations (FCS) i.e., public charging stations for long range EVs and/or heavy duty EVs (like trucks, buses etc.) will have the following:
 - (i) At least two chargers of minimum 100 kW (200-750 V or higher) each of different specification (CCS/CHAdEMO or any fast charger as approved by BIS for above capacity) with single connector gun each.
 - (ii) Appropriate Liquid cooled cables high speed charging facility as above [17(i)], for onboard charging of fluid cooled batteries (currently available in some long range EVs), if required.
18. Fast Charging Stations (FCS) which are meant only for 100% in house/captive utilization, for example buses of a company, would be free to decide the charging specifications as per requirement for its in-house company EVs.
19. Additional PCS/FCS can be installed even if there exists a PCS/FCS in the required grid or distance.
20. Separate metering arrangement shall be made for PCS so that consumption may be recorded and billed as per applicable tariff for EV charging stations.
21. The power quality analysis at each public charging station shall be done. The THD shall be within the limit as per IEEE 519-1992 and IEC 61000-3-12/2-4.
22. An emergency push button shall be provided at the power incomer side for disconnection of power supply to public EV charging station.
23. Three phase Electrical Vehicle Supply Equipment (EVSE) shall be equally loaded in all phases.
24. Battery charging system (BCS) shall be treated as par with public charging station (PCS).
25. The captive charging station (CCS) shall not be used for commercial purpose.

(b) Charging Points

26. All electric vehicle charging points shall be installed so that any socket-outlet of supply is at least 800 millimetre above the finished ground level.
27. A cord extension set or second supply lead shall not be used in addition to the supply lead for the connection of the electric vehicle to the electric vehicle

charging point and it shall be so constructed so that it cannot be used as a cord extension set.

28. An adaptor shall not be used to connect a vehicle connector to a vehicle inlet.
29. Portable socket-outlets are not permitted to be used for electric vehicle charging.
30. Each electric vehicle charging points shall be supplied individually by a dedicated final sub-circuit protected by an over current protective device complying with IEC 60947-2, IEC 60947-6-2 or the IEC 60269 series and the over current protective device shall be part of a switchboard.

(c) EVSE Requirements

31. The electric vehicle charging station shall be equipped with a protective device against the uncontrolled reverse power flow from vehicle.
32. One second after having disconnected the electric vehicle 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) and if the voltage is greater than 42.4 V peak (30 V rms) or 60 V D.C., or the energy is 20J or more, a warning label shall be attached in an appropriate position on the charging stations.
33. A vehicle connector used for Direct Current (D.C.) charging shall be locked on a vehicle inlet if the voltage is higher than 60 V D.C. and 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 and in case of charging system malfunction, a means for safe disconnection shall be provided.
34. The Direct Current (D.C.) electric vehicle charging point shall disconnect supply of electricity to prevent overvoltage at the battery, if output voltage exceeds maximum voltage limit set by the vehicle.
35. The electric vehicle charging points shall not energize the charging cable when the vehicle connector is unlocked and the voltage at which the vehicle connector unlocks shall be lower than 60V.
36. All electric vehicle 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.
37. Enclosure of charging stations shall be made of fire-retardant material with self-extinguishing property and free from Halogen.
38. Electric Vehicle Supply Equipment (EVSE) shall be type tested by an agency /lab accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL) from time to time.

(d) Responsibilities of Owner (PEVCS)

39. The owner of the charging station shall keep records in regard to design, construction and labeling to be compatible with a supply of standard voltage at a nominal frequency of 50 Hertz of the charging station.

40. The owner of the charging station shall keep records of the relevant test certificate as indicated in the regulations and as per IEC 61851.
41. Every charging station shall be tested and inspected by the owner or the Electrical Inspector or Chartered Electrical Safety Engineer before energisation of charging stations.
42. The owner of the charging station shall ensure that test and inspection of charging station is being carried out every year in the initial period of first three years after the energisation of charging station and in every four years thereafter.
43. The owner of the charging station shall establish and implement a safety assessment program for regular periodic assessment of the electrical safety of charging station.

The installation shall conform to the following Act, Rules, Regulations & Standards:

1. The relevant provisions of the Central Electricity Authority (Measures Relating to Safety and Electric Supply) Regulations, 2010 and The Electricity Act, 2003.
2. Central Electricity Authority (Measures Relating to Safety and Electric Supply) (Amendment) Regulations, 2019.
3. Ministry of Power, Government of India revised guidelines & standards order No. 12/2/2018-EV dated 01/10/2019.
4. IS 17017 Part I & Part II
5. Various orders/circulars related to EV charging stations published by government of Kerala and Kerala state Electricity Regulatory commission.


Chief Electrical Inspector