

# MINISTRY OF POWER

## (Central Electricity Authority)

**(Technical Standards for Connectivity below 33 kilovolts) Regulations, 2013,**  
**Dated: 30.09.2013 with amendment Dated: 06.02.2019**

Sl. No.	Description	Summary
1.	<b>Control Period</b>	N.A.
2.	<b>Applicability</b>	<ol style="list-style-type: none"> <li>1. These regulations shall apply to all generating companies or persons owning distributed generation resources, charging stations, prosumers or persons who are connected to or seeking connectivity with the electricity system below 33 kV voltage level:</li> <li>2. In case, a licensee owning the electricity system to which connection is to be made, also owns the distributed generation resources, charging station or prosumers, these regulations shall apply mutatis mutandis</li> </ol>
3.	<b>General Connectivity Conditions</b>	<ol style="list-style-type: none"> <li>1. The applicant shall make a formal request to the appropriate licensee for connection to electricity system of the appropriate licensee or generating station as the case may be.</li> <li>2. The applicant shall be responsible for the planning, design, construction, reliability, protection and safe operation of its own equipment subject to the regulations for construction, operation, maintenance and connectivity and other statutory provisions.</li> <li>3. The applicant and the user shall provide necessary facilities in the distributed generation resource for communication and storage of data and other parameters as may be stipulated by the appropriate licensee in a non-discriminatory manner.</li> <li>4. The applicant and the user shall coordinate with the appropriate licensee on the issues including but not limited to protection, safety, and metering.</li> <li>5. The appropriate licensee shall inform the concerned State transmission utility within thirty days of acceptance of application for connectivity of a generating station to electricity system operating at voltage level below 33 kV. The concerned State transmission utility shall in turn inform the State Load Despatch Centre with details of installed capacity, generator capabilities, connectivity and likely date of commissioning or date of commercial operation.</li> <li>6. The applicant and the user shall comply with the cyber security guidelines issued by the Central Government from time to time.</li> </ol>
4.	<b>Standards and Codes of Practice</b>	<ol style="list-style-type: none"> <li>1. The equipment including overhead lines and cables shall comply with the relevant Indian standards issued by Bureau of Indian Standards.</li> <li>2. Whenever a standard other than Indian Standard is followed, necessary</li> <li>3. Corrections or modifications shall be made for nominal system frequency, nominal system voltage, ambient temperature, humidity and other conditions prevailing in India before actual adoption of the said standard.</li> <li>4. The effects of wind, storms, floods, lightning, elevation, temperature extremes, icing, contamination, pollution and earthquakes must be considered in the design and operation of the connected facilities.</li> </ol>
5.	<b>Safety</b>	The applicant shall comply with the Central Electricity Authority (Measures Relating to Safety and Electricity Supply) Regulations, 2010 for the proposes of safety under these regulations.

6.	<b>Sub-station Grounding</b>	Sub-station grounding shall be done in accordance with IS 3043, the code of practice for earthing issued by Bureau of Indian Standards.
7.	<b>Metering</b>	<ol style="list-style-type: none"> <li>1. Meters shall be provided as specified in the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 for the purpose of metering under these regulations.</li> <li>2. Measurement of harmonic current injection, Direct Current injection and flicker shall be done with calibrated meters before the commissioning of the project and once in a year in presence of the parties concerned and the indicative date for the same shall be mentioned in the connection agreement.</li> </ol>
8.	<b>Inspection, Test, Calibration and Maintenance prior to connection</b>	<ol style="list-style-type: none"> <li>1. Before physical connection, the applicant shall complete all inspections and tests finalised in consultation with the appropriate licensee or generating station to which his equipment is getting connected.</li> <li>2. The applicant shall make available all drawings, specifications and test records of the project equipment to the appropriate licensee or generating station as the case may be.</li> </ol>
9.	<b>Standards for distribution generation resources and prosumers, when acting as a generator</b>	<ol style="list-style-type: none"> <li>1. Harmonic current injections from a generating station shall not exceed the limits specified in IEEE 519.</li> <li>2. The distributed generating resource shall not inject Direct Current greater than 0.5% of the full rated output at the interconnection point.</li> <li>3. The distributed generating resource shall not introduce flicker beyond the limits specified in IEC 61000.</li> <li>4. Every distributed generating resource shall be equipped with automatic synchronisation device.</li> <li>5. Induction generators, except self-excited induction generators, shall not require a synchronising device</li> <li>6. Distributed generation resources using inverters shall not be required to have separate synchronising device, if the same is inherently built into the inverter.</li> <li>7. For three-phase generators, the circuit breakers shall be three-phase devices with electronic or electromechanical control. <ul style="list-style-type: none"> <li>• Over and under voltage trip functions if voltage reaches above 110% or below 80% respectively with a clearing time upto two seconds; however, appropriate licensee may prescribe a narrower range of voltage for the purpose.</li> <li>• Over and under frequency trip functions, if frequency reaches 50.5 Hz and below 47.5 Hz with a clearing time upto 0.2 seconds; however, appropriate licensee may prescribe a narrower range of frequency for the purpose.</li> </ul> </li> <li>8. The equipment of the generating station shall meet following requirements, namely: <ul style="list-style-type: none"> <li>• Distributed generation resource and associated equipment shall be designed so that the failure of any single device or component shall not potentially compromise the safety and reliability of the electricity system.</li> <li>• Paralleling device of distributed generation resource shall be capable of withstanding, 220% of the nominal voltage at the interconnection point.</li> </ul> </li> <li>9. Every time the generating station is synchronised to the electricity system, it shall not cause voltage fluctuation greater than <math>\pm 5\%</math> at the point of connection.</li> <li>10. After considering the maintenance and safety procedures, the distribution licensee may require the applicant with a distributed generation resource of capacity exceeding a particular level to provide a manually operated isolating switch between the distributed generation resource and the electricity system, which shall meet following requirements: <ul style="list-style-type: none"> <li>• Allow visible verification that separation has been accomplished;</li> </ul> </li> </ol>

		<ul style="list-style-type: none"> <li>• It shall be capable of being reached quickly and conveniently twenty four hours a day by licensee's personnel without requiring clearance from the applicant;</li> <li>• It shall be located at a height of at least 2.44 m above the ground level.</li> </ul> <p>11. one copy each of the approved drawing and diagrams showing important equipment, protection and control features shall be signed by representative of the applicant and the licensee and shall be in possession of the applicant and licensee.</p>
10.	<b>Standards for charging station, prosumer, or a person connected or seeking connectivity to the electricity system</b>	<ol style="list-style-type: none"> <li>1. The limits of injection of current harmonics at the point of common coupling by the user, method of harmonic measurement and other such matters, shall be in accordance with the IEEE 519-2014 standards, as amended, from time to time.</li> <li>2. The measuring and metering of harmonics shall be a continuous process with power quality meters complying with the provisions of IEC 61000-4-30 Class A</li> <li>3. The user connected at 11 kV and above shall comply with the provision of this sub-regulation within twelve months from the date of commencement of the Central Electricity Authority (Technical Standards for Connectivity of the Distributed Generation Resources) Amendment Regulations, 2018.</li> <li>4. In addition to harmonics, periodic measurement of other power quality parameters such as voltage sag, swell, flicker, disruptions shall be done by the distribution licensee as per relevant IEC standard and the reports thereof shall be shared with the consumer</li> </ol>
11.	<b>Site Responsibility Schedule</b>	A Site Responsibility Schedule for every interconnection point shall be prepared by the appropriate licensee.
12.	<b>Access at Connection Site</b>	The applicant and user shall provide reasonable access and other required facilities to the appropriate licensee for inspection of the equipment belonging to the applicant or user, as the case may be, and for maintenance of the equipment, if any, installed by the appropriate licensee in the premises of the applicant or user, as the case may be.
13.	<b>Registration in Registry maintained by the Authority</b>	The user or the applicant, as the case may be, shall get its generating unit and station of such capacity and with effect from such date as may be fixed by the Authority, registered and obtain an online generated Unique Registration Number from the Authority.
14.	<b>Compliance of Regulations</b>	<ol style="list-style-type: none"> <li>1. It shall be the responsibility of concerned licensee to ensure that before connectivity to the grid, all the provisions with regard to the connectivity stipulated in these regulations are complied with by the applicant.</li> <li>2. The user may be disconnected from the grid by the licensee for non-compliance of any provision of these regulations, under report by the licensee to the appropriate Electricity Regulatory Commission.</li> </ol>