

## CENTRAL ELECTRICITY AUTHORITY

### Central Electricity Authority (Installation and Operation of Meters) Regulations- 2006 Dated 17<sup>th</sup> March, 2006 with Amendments Dated: 4<sup>th</sup> June, 2010 and. Dated: 26<sup>th</sup> November, 2014

Sl. No.	Description	Summary
1.	<b>Short Title and Commencement</b>	<ul style="list-style-type: none"> <li>• Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 dated the 17<sup>th</sup> March, 2006 with Amendments Dated: 4<sup>th</sup> June,2010 and. Dated: 26<sup>th</sup> November, 2014</li> <li>• Regulations to come into force on the date of their publication in the Gazette of India.</li> </ul>
2.	<b>Definitions</b>	As per Regulations.
3.	<b>Applicability</b>	<ul style="list-style-type: none"> <li>• To all the generating companies and licensees engaged in the business of generation, transmission, trading, distribution, supply of electricity and to all categories of consumers.(As per Regulations dated the 17<sup>th</sup> March, 2006)</li> <li>• To all Grid Interactive Renewable Energy Plants seeking connectivity with the grid at 415 V ( o r corresponding voltage as per relevant Indian Standard for values of alternating current(AC) nominal system voltage, as amended ) and below Voltage Levels.</li> <li>• Grid interactive Renewable Energy Plants connected at above 415 V (or corresponding voltage as per relevant Indian Standard for values of alternating current (AC) nominal system voltage, as amended Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006.</li> <li>• All the clauses of 'Consumer Meters' as specified in Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006," would also be applicable for 'Renewable Energy Meter, unless specified in these Regulations.</li> <li>• After coming into force of these regulations, the provisions of the Indian Electricity Rules, 1956 relating to installation and operation of meters in this regard shall not be applicable.</li> <li>• These regulations provide for type, standards, ownership, location, accuracy class, installation, operation, testing and maintenance, access, sealing, safety, meter reading and recording, meter failure or discrepancies, anti tampering features, quality assurance, calibration and periodical testing of meters, additional meters and adoption of new technologies in respect of following meters for correct accounting, billing and audit of electricity:               <ul style="list-style-type: none"> <li>– Interface meter</li> <li>– Consumer meter</li> <li>– Energy accounting and audit Meter</li> </ul> </li> </ul>
4.	<b>Type of Meters</b>	<ul style="list-style-type: none"> <li>• All interface meters, consumer meters and energy accounting and audit meters to be of static type.</li> <li>• Meters not complying with these regulations to be replaced by the licensee</li> </ul>
5.	<b>Standards</b>	<p>All interface meters, consumer meters and energy accounting and audit meters shall –</p> <p>(a) Comply with the relevant standards of Bureau of Indian Standards (BIS). If BIS Standards are not available for a particular equipment or material, the relevant British Standards (BS), International Electro-technical Commission (IEC) Standards, or any other equivalent Standard shall be followed: Provided that whenever an international Standard or IEC Standard is followed, necessary 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;</p> <p>(b) Conform to the standards on 'Installation and Operation of Meters' as specified in Schedule annexed to these regulations and as amended</p>

6.	<b>Ownership of Meters.</b>	<p><b>Interface meters</b></p> <p>(a) All interface meters installed at the points of interconnection with Inter-State Transmission System (ISTS) for electricity accounting and billing to be owned by CTU.</p> <p>(b) All interface meters installed at the points of interconnection with Intra-State Transmission System excluding the system covered under sub-clause (a) above for electricity accounting and billing shall be owned by STU.</p> <p>(c) All interface meters installed at the points of inter connection between the two licensees excluding those covered under sub-clauses (a) and (b) above for electricity accounting and billing to be owned by respective licensee of each end.</p> <p>(d) All interface meters installed at the points of inter connection for electricity accounting and billing not covered under sub-clauses (a), (b) and (c) above shall be owned by supplier of electricity.</p> <p><b>Consumer meters</b></p> <p>(a) Consumer meters shall generally be owned by the licensee.</p> <p>(b) If any consumer purchases a meter, the same shall be tested, installed and sealed by the licensee. The consumer shall claim the meter purchased by him as his asset only after it is permanently removed from the system of the licensee.</p> <p>(b) All consumer meters shall bear BIS mark, meet the requirements of these regulations and have additional features as approved by the Appropriate Commission or pursuant to the reforms programme of the Appropriate Government. To facilitate this, the licensee shall provide a list of makes and models of the meters.</p> <p><b>Energy accounting and audit meters</b></p> <p>Energy accounting and audit meters shall be owned by the generating company or licensee, as the case may be.</p>
7.	<b>Locations of Meters</b>	<p><b>(1) Interface meter</b></p> <p><b>A.</b> The location of main, check and standby meters installed at the existing generating stations shall not be changed unless permitted by the Authority. The location of interface meters shall be as below,</p> <p><b>(a) Generating Station</b></p> <ul style="list-style-type: none"> <li>• <b>Main meter:</b> On all outgoing feeders.</li> <li>• <b>Check meter:</b> On all outgoing feeders.</li> <li>• <b>Standby meter:</b> (i) High Voltage (HV) side of Generator Transformers (ii) HV side of all Station Auxiliary Transformers</li> </ul> <p><b>(b) Transmission and Distribution System</b></p> <ul style="list-style-type: none"> <li>• <b>Main meter:</b> At one end of the line between the substations of the same licensee, and at both ends of the line between sub-stations of two different licensees. Meters at both ends shall be considered as main meters for respective licensees.</li> <li>• <b>Standby meter :</b> There shall be no separate standby meter. Meter installed at other end of the line in case of two different licensees shall work as standby meter.</li> </ul> <p><b>(c) Inter-Connecting Transformer (ICT)</b></p> <ul style="list-style-type: none"> <li>• <b>Main meter:</b> High Voltage (HV) side of ICT.</li> <li>• <b>Standby meter:</b> Low Voltage (LV) side of ICT.</li> </ul> <p><b>(d) Consumer directly connected to the Inter-State Transmission System or Intra-State Transmission System covered under ABT &amp; permitted open access by the Appropriate Commission Or For consumers connected to distribution system and permitted open access by the Appropriate Commission Or Any other system not covered above :</b> As decided by the Appropriate Commission</p> <p><b>B.</b> Scheme for location of interface meters shall be submitted to the Central Transmission Utility/ State Transmission Utility/ licensee by owner of the meter in advance, before the installation of the scheme</p> <p><b>(2) Consumer meter.-</b></p> <p>(a) Consumer meter shall be installed by the licensee either at the consumer premises/ outside consumer premises:</p>

<p>7.</p>		<p>If the licensee installs the consumer meter outside the consumer premises, licensee on a request from consumer shall provide real time display unit at the consumer premises for his information to indicate the electricity consumed by the consumer.. For the purpose of billing, the reading of consumer meter to be taken into account.</p> <p>(b) The location of meter and height of meter display from floor shall be as per Indian Standard on Testing, Evaluation, Installation and Maintenance of AC Electricity Meters – Code of Practice.</p> <p>(c) For outdoor installations, the meters shall be protected by appropriate enclosure of level of protection specified in the Indian Stanadard on Testing, Evaluation, Installation and Maintenance of ac Electricity Meters – Code of Practice.</p> <p>(d) The location of Renewable Energy Meters shall be as specified below:</p> <table border="1" data-bbox="581 541 1448 919"> <thead> <tr> <th data-bbox="581 541 977 583">Metering arrangement</th> <th data-bbox="977 541 1448 583">Location of Renewable Energy Meter</th> </tr> </thead> <tbody> <tr> <td data-bbox="581 583 977 709">Feed in Tariff metering: Renewable Energy Plant is connected to the grid to inject the entire electricity generated to the grid</td> <td data-bbox="977 583 1448 709">Out going feeder from Renewable Energy Plant</td> </tr> <tr> <td data-bbox="581 709 977 919">Net metering : Renewable Energy Plant is connected to the load bus of the owner to consume electricity generated primarily by the owner of the Plant and excess electricity, if any, is injected to the grid</td> <td data-bbox="977 709 1448 919">In case of first installation for the purpose of Renewable Energy Metering, the 'Renewable Energy Meter' shall be installed at the location specified for consumer meter and in case of existing consumers, the consumer meter shall be replaced with 'Renewable Energy Meter'.</td> </tr> </tbody> </table> <p>Note : In case of Net metering, Renewable Energy Plants with battery can supply the consumer load in the event of grid failure. In this case, an automatic isolating mechanism has to be provided at appropriate location to make islanding of the consumer load from the grid at the event of grid failure</p> <p><b>(3) Energy accounting and audit meter.-</b> Energy accounting and audit meters to be installed at following locations to facilitate the accounting of the energy generated, transmitted, distributed and consumed in various segments of the power system and the energy loss, namely:-</p> <p><b>(i) Generating Stations.-</b></p> <p>(a) at a point after the generator stator terminals and before the tap-off to the unit auxiliary transformer(s),</p> <p>(b) on each incoming feeder of 3.3 kV and above.</p> <p>(c) low voltage side of each incoming transformer feeder of low voltage (415 V) buses, and</p> <p>(d) on all high tension motor feeders.</p> <p>Provided that in case, numerical relays having built-in feature of energy measurement of requisite accuracy are provided in high voltage or low voltage switchgear, separate energy meter is not necessary.</p> <p><b>(ii) Transmission system.-</b> All incoming and outgoing feeders (if the interface meters do not exist)</p> <p><b>(iii) Distribution system.-</b></p> <p>(a) All incoming feeders(11 kV and above)</p> <p>(b) All outgoing feeders (11 kV and above)</p> <p>(b) Sub-station transformer including distribution transformer- Licensee may provide the meter on primary or secondary side or both sides depending upon the requirement for energy accounting and audit.</p>	Metering arrangement	Location of Renewable Energy Meter	Feed in Tariff metering: Renewable Energy Plant is connected to the grid to inject the entire electricity generated to the grid	Out going feeder from Renewable Energy Plant	Net metering : Renewable Energy Plant is connected to the load bus of the owner to consume electricity generated primarily by the owner of the Plant and excess electricity, if any, is injected to the grid	In case of first installation for the purpose of Renewable Energy Metering, the 'Renewable Energy Meter' shall be installed at the location specified for consumer meter and in case of existing consumers, the consumer meter shall be replaced with 'Renewable Energy Meter'.
Metering arrangement	Location of Renewable Energy Meter							
Feed in Tariff metering: Renewable Energy Plant is connected to the grid to inject the entire electricity generated to the grid	Out going feeder from Renewable Energy Plant							
Net metering : Renewable Energy Plant is connected to the load bus of the owner to consume electricity generated primarily by the owner of the Plant and excess electricity, if any, is injected to the grid	In case of first installation for the purpose of Renewable Energy Metering, the 'Renewable Energy Meter' shall be installed at the location specified for consumer meter and in case of existing consumers, the consumer meter shall be replaced with 'Renewable Energy Meter'.							
<p>8.</p>	<p><b>Accuracy Class of Meters</b></p>	<p>As specified in the standards given in the Schedule.</p>						

9.	<b>Installation of Meters</b>	<ul style="list-style-type: none"> <li>• Generating company/licensee, to examine, test and regulate all meters before installation and only correct meters to be installed.</li> <li>• Meter to be installed at locations, which are easily accessible for installation, testing, commissioning, reading, recording and maintenance.</li> <li>• In case of single phase meters, consumer to ensure that there is no common neutral or phase or looping of neutral or phase of two or more consumers on consumers' side wiring. In case it is so, licensee to inform the consumer</li> <li>• Consumer to install the Earth Leakage Protective Device (ELPD)</li> <li>• If the earth leakage indication is displayed in the meter the licensee shall suitably inform the consumer.</li> <li>• In case CTs and VTs form part of the meters, the meter shall be installed as near the instrument transformers as possible to reduce the potential drop in the secondary leads.</li> </ul>
10.	<b>Operation, Testing and Maintenance of Meters</b>	The operation, testing and maintenance of all types of meters shall be carried out by the generating company or the licensee, as the case may be.
11.	<b>Access to Meter</b>	The owner of the premises where, the meter is installed to provide access to the authorized representative(s) of the licensee for installation, testing, commissioning, reading and recording and maintenance of meters.
12.	<b>Sealing of Meters</b>	<p>(a) All meters shall be sealed by the manufacturer at its works. In addition to the seal provided by the manufacturer, sealing of all meters to be done at various sealing points as per the standards given in the Schedule:</p> <ul style="list-style-type: none"> <li>(i) Sealing of interface meters, to be done by both the supplier and the buyer.</li> <li>(ii) Sealing of consumer meters to be done by the licensee.</li> <li>(iii) Sealing of energy accounting and audit meters to be done by the licensee / generating company</li> </ul> <p>(b) A tracking and recording software for all new seals shall be provided by the manufacturer of the meter.</p> <p>(c) Seal shall be unique for each utility and name or logo of the utility shall be clearly visible on the seals.</p> <p>(d) Only the patented seals (seal from the manufacturer who has official right to manufacture the seal) shall be used.</p> <p>(e) Polycarbonate or acrylic seals or plastic seals or holographic seals or any other superior seal shall be used</p> <p>(f) Lead seals shall not be used in the new meters. Old lead seals to be replaced by new seals in a phased manner and the time frame of the same shall be submitted by the licensee to the Appropriate Commission for approval.</p> <p><b>Removal of seals from meters</b></p> <p><b>(a) Interface meters</b> Whenever seals of the interface meters have to be removed, advance notice to be given to other party for witnessing the removal of seals and resealing of the interface meter. The breaking and re-sealing of the meters shall be recorded by the party, who carried out the work, in the meter register, mentioning the date of removal and resealing, serial numbers of the broken and new seals and the reason for removal of seals.</p> <p><b>(b) Consumer meters</b> Seal of the consumer meter shall be removed only by the licensee. No consumer to tamper with, break or remove the seal under any circumstances. Any tampering, breaking or removing the seal from the meter shall be dealt with as per relevant provisions of the Act.</p> <p><b>(c) Energy accounting and audit meters</b> Seal of the energy accounting and audit meter shall be removed only by the generating company or the licensee who owns the meter.</p>

<p>13.</p>	<p><b>Safety of Meters</b></p>	<ul style="list-style-type: none"> <li>• Supplier/ buyer in whose premises the interface meters are installed to be responsible for their safety.</li> <li>• Consumer to take precautions for the safety of the consumer meter installed in his premises belonging to the licensee.</li> <li>• Licensee shall be responsible for the safety of the consumer meter located outside the consumer premises and the consumer for the safety of the real time display unit installed by the licensee in consumer premises.</li> <li>• Generating company/ licensee who owns the energy accounting and audit meters to be responsible for its safety.</li> </ul>
<p>14.</p>	<p><b>Meter Reading and Recording</b></p>	<p><b>(1) Interface meters</b> It shall be the responsibility of the Appropriate Transmission Utility/ licensee to take down the meter reading and record the metered data, maintain database of all the information associated with the interface meters and verify the correctness of metered data and furnish the same to various agencies as per the procedure laid down by the Appropriate Commission.</p> <p><b>(2) Consumer meters</b> (a) It shall be the responsibility of the licensee to record the metered data, maintain database of all the information associated with the consumer meters and verify the correctness of metered data. (b) The licensee shall maintain accounts for the electricity consumption and other electrical quantities of its consumers. (c) Brief history, date of installation and details of testing, calibration and replacement of meters shall be maintained by the licensee.</p> <p><b>(3) Energy accounting and audit meters</b> It shall be the responsibility of the generating company/licensee to record the metered data, maintain database of all the information associated with the energy accounting and audit meters and verify the correctness of metered data. Each generating company/ licensee to prepare quarterly, half-yearly and yearly energy account for its system for taking appropriate action for efficient operation and system development.</p>
<p>15.</p>	<p><b>Meter Failure or Discrepancies</b></p>	<p><b>1. Interface meters</b> (a) Whenever difference between the readings of the Main meter and the Check meter for any month is more than 0.5%, following steps to be taken: (i) checking of CT and VT connections; (ii) testing of accuracy of interface meter at site with reference standard meter of accuracy class higher than the meter under test. If the difference exists even after such checking or testing, the defective meter to be replaced with a correct meter. (b) In case of conspicuous failures like burning of meter and erratic display of metered parameters or the error found in testing of meter is beyond the permissible limit of error provided in the relevant standard, the meter shall be immediately replaced with a correct meter. (c) In case where both the Main meter and Check meter fail, at least one of the meters shall be immediately replaced by a correct meter. (d) Billing for the Failure period: (i) Billing for the failure period of the meter shall be done as per the procedure laid down by the Appropriate Commission. (ii) Readings recorded by Main, Check and Standby meters for every time slot shall be analysed, crosschecked and validated by the Appropriate Load Despatch Centre (LDC). The discrepancies, if any, noticed in the readings shall be informed by the LDC in writing to the energy accounting agency for proper accounting of energy. LDC to intimate the discrepancies to the Appropriate Transmission Utility or the licensee, who shall take further necessary action regarding testing, calibration or replacement of the faulty meters in accordance with the provisions laid down. (e) The defective meter shall be immediately tested and calibrated</p>

		<p><b>2. Consumer meters</b></p> <p>In case the consumer reports to the licensee about consumer meter readings not commensurate with his consumption of electricity, stoppage of meter, damage to the seal, burning or damage of the meter, the licensee to take necessary steps as per the procedures given in the Electricity Supply Code of the Appropriate Commission read with the notified conditions of supply of electricity.</p> <p><b>3. Energy accounting and audit meters</b></p> <p>Energy accounting and audit meters shall be rectified or replaced by the generating company /licensee immediately after notice of any of the following abnormalities:</p> <p>(a) Errors in the meter readings are outside the limits prescribed for the specified Accuracy Class;</p> <p>(b) Meter readings are not in accordance with the normal pattern of the load demand;</p> <p>(c) Meter tampering, or erratic display or damage.</p>
16.	<b>Anti-tampering Features of Meters</b>	Meters to be provided with such anti-tampering features as per the Standards on Installation and Operation of Meters given in the Schedule
17.	<b>Quality Assurance of Meters</b>	<ul style="list-style-type: none"> <li>• Distribution licensee to put in place a system of quality assurance and testing of meters with the approval of Appropriate Commission.</li> <li>• licensee to set up appropriate number of accredited testing laboratories or utilize the services of other accredited testing laboratories.</li> <li>• Generating company/ licensee to ensure that all type, routine and acceptance tests are carried out by the manufacturer complying with the requirement of the relevant IS or BS or IEC as the case may be.</li> </ul>
18.	<b>Calibration and Periodical Testing of Meters</b>	<p><b>Interface meter</b></p> <p>(a) At the time of commissioning, each interface meter shall be tested by the owner at site</p> <p>(b) All interface meters to be tested at least once in five years and also be tested whenever the energy and other quantities recorded by the meter are abnormal or inconsistent with electrically adjacent meters. .</p> <p><b>Consumer meters</b></p> <p>Testing of consumer meters shall be done at site at least once in five years. Testing may be carried out through NABL accredited mobile laboratory or at any accredited test laboratory and recalibrated if required at manufacturer's works.</p> <p><b>Energy accounting and audit meters</b></p> <p>Energy accounting and audit meters shall be tested at site at least once in five years or whenever the accuracy is suspected or whenever the readings are inconsistent with the readings of other meters</p> <p>Testing and calibration of interface meters may be carried out in the presence of the representatives of the supplier and buyer.</p> <p>Note :Testing may be carried out through NABL accredited mobile laboratory</p>
19.	<b>Additional Meters</b>	In addition to any meter which may be placed for recording the electricity consumed by the consumer, the licensee may connect additional meters, maximum demand indicator etc.
20.	<b>Adoption of new Technologies</b>	Distribution licensee may adopt new technologies such as pre-paid meters, time of the day meters (TOD), automatic remote meter reading system through appropriate communication system with the approval of the Appropriate Commission