

Standard Operating Procedure (SOP)
Procurement and Installation
of
ISTS Interface Energy Meter (IEM/SEM)

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Prepared By

Central Transmission Utility of India Limited

Table of Contents

Preamble.....	4
Introduction.....	4
A. Procedure for replacement of Faulty ISTS IEM/SEM	5
1. Identification of faulty IEM/SEM and communication to CTU	5
2. Communication to POWERGRID	5
3. Replacement of Faulty IEM/SEM	6
B. Procedure for Supply & Installation of ISTS IEM/SEM for new systems and any other new requirements as identified by RLDCs	6
C. Payment and Warranty	6
D. Standardized charges for Supply, and Supply and Installation of IEM.....	7
E. Bulk Procurement of ISTS IEM/SEM.....	7
F. Inventory Management.....	7

Abbreviation

IEM	Interface Energy Meter
SEM	Special Energy Meter
AMR	Automatic meter reading
ISTS	Inter-state Transmission System
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
RPC	Regional Power Committee
CTUIL	Central Transmission Utility of India Limited
RLDC	Regional Load Despatch Centers

Standard Operating Procedure (SOP)

Procurement & Installation of ISTS Interface Energy Meter (IEM/SEM)

Preamble

As per CEA metering regulations, 2006 and its amendment thereof and CERC Indian Electricity Grid Code, 2023; all interface meters installed at the points of interconnection with Inter-State Transmission System (ISTS) for the purpose of electricity accounting and billing are owned by CTU. CTU is responsible for procurement and installation of Interface Energy Meters (IEMs), at the cost of respective entity, at all the ISTS interface points, points of connections between the regional entities, cross border entities and other identified points for recording of actual active and reactive energy interchanged in each time-block through those points, and its operation and periodic calibration shall be done by the respective entity. CTU is responsible for replacement of faulty meters. Procurement of Interface Energy Meters for ISTS nodes are planned by CTU in coordination with RLDCs/NLDC and POWERGRID as per the CEA metering regulations. The ISTS interface energy meter requirement is decided considering the upcoming projects in next two years, status of faulty cases and spare requirements etc. and the same is procured by POWERGRID on behalf of CTU based on RLDC metering scheme for new requirements and RLDC advise for replacement.

The SOP tells about the process of procurement and installation of IEM (Interface Energy Meter)/ SEM (Special Energy Meter) Meters.

Introduction

This Standard Operating Procedure (SOP) for Procurement and Installation of Interface Energy Meter (IEM/SEM) will be applicable only for the IEM/SEM falling under the purview of CTU as per the provisions under Regulations 49.12 (a) of CERC (Indian Electricity Grid Code), Regulations, 2023 and as per clause 6 (1)(a) of CEA (Installation and Operation of Meters) Regulations and amendments thereof. The Regulation 49.12(a) & 6 (1) is reproduced below:

“49.12 *Energy Metering and Accounting:*

- (a) The CTU shall be responsible for procurement and installation of Interface Energy Meters (IEM/ SEM), at the cost of respective entity, at all the ISTS interface points, points of connections between the regional entities, cross border entities and other identified points for recording of actual active and reactive energy interchanged in each time-block through those points, and its operation and periodic calibration shall be done by the respective entity. CTU shall be responsible for replacement of faulty meters.”*

“6. *Ownership of meters:*

- (1) **Interface meters** (a) All interface meters installed at the points of interconnection with Inter-State Transmission System (ISTS) for the purpose of electricity accounting and billing shall be owned by CTU.*

The objective of this procedure is to ensure timely installation of IEM/SEM in the new ISTS system, any other new requirements as identified by RLDCs and timely replacement of the defective IEM/SEM by CTU. All the regional entities, TSPs/ GENCOs/ RE generators/ Bulk Consumers, shall bear the charges towards the Supply & installation of the IEM/SEM provided by CTU.

Presently, POWERGRID is carrying out the procurement of IEM/SEM, installation of new IEM/SEM and replacement of defective IEM/SEM as per agreement with CTUIL. Installation/ Replacement of IEM/SEM shall mean all the activities including supply of new IEM/SEM, its installation, testing and commissioning.

The procedure also elaborates about timely payment by the respective entities against supply & installation/replacement of the IEM/SEM. The complete cycle of installation/replacement of IEM/SEM has been elaborated into various steps as described in Part A & B. Since timely procurement and availability of sufficient no. of IEM/SEM is the key requirement, Part D of this procedure deals with timely estimation of requirement & procurement of IEM/SEM. Part C and Part F are for payment &

warranty and inventory management respectively.

Applicability

The procedure shall be applicable for the entities which are in the RLDCs control area and whose metering and energy accounting & scheduling is done at the regional level. Thus, all GENCOs including RE generators, Bulk Consumers and all other utilities which are connected to ISTS Grid are the entities for the purpose of this procedure.

Effectiveness

The date of effectiveness of this procedure shall be notified separately on CTUIL website.

A. Procedure for replacement of Faulty ISTS IEM/SEM

1. Identification of faulty IEM/SEM and communication to CTU

- 1.1. Any Entity who proposes IEM/SEM replacement shall inform concerned RLDC about such requirement along with the reasons thereof. RLDC shall also ascertain inconsistent IEM/SEM data (received through AMR system or otherwise). In case RLDC observes any discrepancy in IEM/SEM data, they shall communicate to the entity within 3 working days from the detection of such discrepancy in data or defective IEM/SEM for replacing the meter with meter details.
- 1.2. If RLDC observes any discrepancy in IEM/SEM data at their end, RLDC shall communicate to the entity and CTU within 3 working days from the detection of such discrepancy in data or defective IEM/SEM for replacing the meter with meter details.
- 1.3. The Entity shall take immediate steps to get all the issues rectified (if the issues can be rectified at site) within 7 working days from receipt of above communication from RLDC. If the issue is not rectified within 7 working days or if it is established that IEM/SEM needs to be replaced, the Entity shall communicate (through letter or e-mail/CTU Urja Meter Portal) to CTUIL, within next 3 working days requesting replacement of the defective IEM/SEM. The said communication shall include the following:
 - a. The location, serial no., make and model of the defective IEM/SEM along with accessories (required if any) and all other details of meter (attached as Annexure-I)
 - b. The date of installation of the above IEM/SEM to be replaced
 - c. RLDC advisory for Meter replacement

A copy of this communication shall be sent to respective RLDC and regional nodal officer of POWERGRID. The contact details of POWERGRID Nodal officers shall be made available on CTUIL's website.

In case the Entity does not respond within the above timeline, RLDC shall communicate its opinion to CTU regarding the replacement of the faulty SEM/IEM and also put up agenda in RPC to insist entity for meter replacement.

- 1.4. In line with applicable Regulations, the replacement of IEM/SEM shall be on a chargeable basis. The Entity will make payment in advance for supply & installation of the IEM/SEM, in accordance with the provisions of this procedure, as per the invoice raised by POWERGRID.

2. Communication to POWERGRID

- 2.1. On receipt of the above communication from the Entity, CTUIL within 3 working days from receipt of the said communication, shall advise POWERGRID (through e-mail/CTU Urja Meter Portal) to replace the defective IEM/ SEM. A copy of the advice shall also be sent to the respective Entity.

3. Replacement of Faulty IEM/SEM

- 3.1. POWERGRID shall raise the invoice to the concerned Entity within 7 working days from receipt of the advice from CTUIL and shall replace the defective IEM/SEM within 8 working days from date of Receipt of Payment from the Entity and update the details of Replaced Meter in Urja Meter Portal.

After replacement of faulty IEM/SEM, the entity shall inform respective RLDC & CTUIL about the same with necessary details (Meter Sl. No., Make, Model, Date of replacement and meter location and other details as specified in Annexure-I) within 2 days.

4. AMR system will validate the meter installation & integration wherever applicable.

B. Procedure for Supply & Installation of ISTS IEM/SEM for new systems and any other new requirements as identified by RLDCs

1. The Entity shall request CTUIL (through letter and e-mail/CTU Urja Meter Portal) by providing details regarding region, state, company name, applicant contact no., location of meters/Name of elements, substation name, no. of IEMs required, and other details as specified in *Annexure-I* for installation of new IEM/SEM enclosing the Metering Scheme Letter issued by respective RLDC. Entity shall make such request to CTUIL at least three months in advance of the anticipated COD (Commercial Operation Date) of the new system and a copy of this communication shall be sent to respective RLDC and regional nodal officer of POWERGRID.
2. Metering scheme approval shall be issued to entity by RLDCs in a uniform format including specific meter details for location of IEMs, name of elements, Type of meter, no. of IEMs to be provisioned by CTU, Schematic diagram etc.
3. On receipt of the above request from the Entity/ RLDC, CTUIL validates the application and if scheme found in order, CTUIL within 5 working days from receipt of the said request, shall advise POWERGRID (through e-mail/CTU Urja Meter Portal) to install the IEM/SEM in the new system as per RLDC Metering Scheme. A copy of the advice shall also be sent to the respective Entity.
4. Accordingly, POWERGRID shall raise the invoice for the Entity and Entity shall process the advance payment within 10 working days as per invoice raised by POWERGRID for supply & installation of IEM/SEM. The entity shall further coordinate with POWERGRID regional nodal person along with the CTUIL letter regarding requirements of IEM/SEM along with required accessories, intimating the timeframe for IEM/SEM installation.
5. POWERGRID shall install IEM/SEM in the new system at least 15 days before anticipated COD of the new system and shall update the installed meter details in Urja Meter Portal.
6. After installation of IEM/SEM, the entity shall inform respective RLDC & CTUIL about the same with necessary details (Meter Sl.No, Make, Model, Date of installation and meter location) within 2 days.
7. AMR system will validate the meter installation & integration wherever applicable.

C. Payment and Warranty

1. The entity shall make advance payment to POWERGRID within 10 working days from the date of invoice raised by POWERGRID for supply & installation of IEM/SEM (as per clause 49.12(a) of IEGC, 2023) for the new system as well as for replacement of faulty meters and same shall be updated in portal by entity & POWERGRID.
2. IEM/SEM once installed shall be under warranty for a period of 1 year from the date of

installation. During this warranty period, if the meter becomes defective, the entity shall take up the matter directly with POWERGRID's nodal officers with a copy to CTUIL. POWERGRID's nodal officer shall arrange for repairs/replacement of such faulty IEM/SEM within 15 working days from the date of intimation by the entity.

3. For smooth provisioning of meter, the cases in which entity is not making payment within timeline, matter shall be resolved by RPC.

D. Standardized charges for Supply, and Supply and Installation of IEM

CTU, in consultation with POWERGRID, shall devise region-wise standardized rate for Supply, and Supply & Installation of IEM for each Financial Year.

E. Bulk Procurement of ISTS IEM/SEM

1. By the end of September of each year, CTUIL/STU shall estimate the details of ISTS projects, RE Generators, GENCOs etc. coming up in the next 2 years and this shall be shared with respective RLDC.
2. RLDC shall work out the metering scheme for total requirement of IEM/SEM under the following heads:
 - i. For new ISTS system, GENCOs including RE Generators, new requirements.
 - ii. Spares @10% of the IEM/SEM population in the region.
 - iii. Projected requirement towards replacement of defective IEM/SEM based on past 2-year trend.

RLDC shall inform Quantity of IEM/SEM to CTUIL by October end.

3. On receipt of the IEM/SEM quantity from RLDCs, CTUIL shall aggregate the requirement on PAN India basis and issue procurement advice to POWERGRID after approval from respective RPCs.

F. Inventory Management

RLDC would furnish the report on working, suspect and defective IEM/SEM in respective regions to CTUIL, every month. POWERGRID would furnish the region-wise inventory/stock quarterly of the IEM/SEM available with them to CTUIL.

Based on this input, CTUIL may issue suitable directions for diversion of spares from one region to another or initiate timely action for procurement of spares.

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Typical forms and their fields in CTU Urja Meter Portal

Form no. 1: Form for “Request for New IEMs” in ISTS applicant login

Sr. No.	Field Name
1.	Region (Dropdown: NR, SR, NER, ER, WR, cross border country)
2.	State (Dropdown: Indian states, blank for cross border country)
3.	Reporting RLDC (Dropdown: NRLDC, ERLDC, NERLDC, WRLDC, SRLDC)
4.	Company name
5.	Company Type (Dropdown: TSP, Solar Generator, wind farm, hydro, thermal, nuclear plant, solar park, hybrid, Gas plant, Others)
6.	Station name
7.	No. of IEMs required
8.	Upload Button (Dropdown: Invoice, Installation Report, RLDC Metering Scheme, RLDC Mail, CTU Work Order, Misc, Payment Receipt, etc)
9.	Remarks

Form no. 2: Form for “Replacement of IEMs” in ISTS applicant login

Sr. No.	Field Name
1.	Region
2.	State
3.	Station name
4.	Name of element
5.	Meter No.
6.	Meter Make
7.	Reason for Replacement
8.	Commissioning date
9.	Upload Button (Dropdown: Invoice, Installation Report, RLDC Metering Scheme, RLDC Mail, CTU Work Order, Misc, Payment Receipt, etc)
10.	Meter Software name & Version
11.	AMR compliant
12.	Meter Provisioning (Dropdown: 5min/15min)
13.	Bay No./Unit No.
14.	Bay Owner
15.	Cross border Meter (Dropdown: Yes/No), if yes then enter country name
16.	Stages (Dropdown: Generating Station, Transmission and distribution system, Inter-connecting Transformer, Others)
17.	Meter Type (Dropdown: Main, Check, standby)
18.	Remarks

Form no. 3: Form for entering IEMs details in POWERGRID login

Sr. No.	Field Name
1.	Meter No.
2.	Meter Make
3.	Commissioning date/Date of replacement
4.	Meter Software name & Version (Dropdown: Smart Grid, Mcube, etc.)
5.	AMR compliant (Dropdown: Yes/No)
6.	Meter type (Dropdown: 5min/15min)

7.	Meter Provisioning for (Dropdown: new system/ replacement)
8.	Station name
9.	Bay No./Unit No.
10.	Bay Owner
11.	Cross border Meter (Dropdown: Yes/No), if yes then enter country name
12.	Stages (Dropdown: Generating Station, Transmission and distribution system, Inter-connecting Transformer, Others)
13.	Meter Type (Dropdown: Main, Check, standby)
14.	Name of element
15.	Element type (Dropdown: Bus-sectionaliser, Tie-line, GT, Auxiliary transformer, Transmission line between substations of same licensee, Transmission line between substations of different licensee, Outgoing feeders, ICTs)
16.	Voltage level (Dropdown: 11kV, 33kV, 132kV, 220kV, 400kV, 765kV etc.)
17.	DCD make & model
18.	DCD software & version
19.	DCU make & model
20.	DCU Software & Version
21.	Remarks