

**RULES ON METERS AND INSTRUMENT TRANSFORMERS’
ACCURACY LIMITS, ACCURACY TESTING AND OTHER
REQUIREMENTS**

ARTICLE I

GENERAL PROVISIONS

Section 1. These Rules/Guidelines shall be known as the *“Rules on Meters and Instrument Transformers’ Accuracy Limits, Accuracy Testing and Other Requirements.”*

Section 2. Objectives. - These Rules aim to set the applicable standards and accuracy limits that will be used for all meters and instrument transformers based on the type of customers and their facilities. These Rules shall align and harmonize the applicability of the Philippine Distribution Code (PDC), Philippine Grid Code (PGC) and other applicable metering rules and standards that shall apply to a particular type of metering facility.

Section 3. Applicability. - These Rules shall apply to the following:

- a. All Distribution Utilities (DUs);
- b. All types of customers connected to the distribution system, including the;
(a) captive customers, (b) contestable customers, and (c) embedded generator-customers;
- c. Redistributors;
- d. Transmission Provider (TP); and
- e. Generators

Section 4. Definition of Terms.

Accuracy Class (Instrument Transformer)	The limits of transformer correction factor in terms of percent error, that have been established to cover specific performance ranges for line power factor conditions between 1.0 and 0.6 lag.
Act	Republic Act No. 9136, otherwise known as the Electric Power Industry Reform Act of 2001.
American National Standards Institute (ANSI)	A private non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States.
Captive Market	Refers to electricity end-users who do not have choice of a supplier of electricity, as may be determined by the ERC in accordance with the EPIRA.
Contestable Market	The electricity end-users who have a choice of supplier of electricity, as may be determined by the ERC in accordance with the EPIRA.
Distribution Utility	Any electric cooperative, private corporation, government owned utility or existing local government unit which has an exclusive franchise to operate a distribution system in accordance with its franchise and the Act.
Embedded Generator	A person or entity that generates electricity using a Generating Plant that is connected to a Distribution System of any User and has no direct connection

to the Grid.

EPIRA

Republic Act No. 9136, otherwise known as the Electric Power Industry Reform Act of 2001

Energy Regulatory Commission (ERC)

The independent and quasi-judicial regulatory agency created under Section 38 of the Act.

Generation Company

Any person or entity authorized by the ERC to operate a facility used in the Generation of Electricity.

International Electrotechnical Commission (IEC)

A worldwide organization for Standardization comprising all national electrotechnical committees.

Instrument Transformers

A transformer that reproduces in its secondary circuit in a definite and known proportion, the voltage or current of its primary circuit with the phase relation substantially preserved.

Redistributors

A person or entity, which has an electric service contract with PU's, EC and re-distributes electricity to other person/s or entity/ies. This may include a building owner, building administrator or homeowners' association charged with the responsibility of redistributing electricity to the individual unit-users of the same building or the owner of the Load-End Power Substation charged with the responsibility of redistributing electricity to the individual building owners with an industrial or Commercial Complex.

Transmission Provider

The TRANSCO or its Concessionaire with the exclusive national franchise for the operation, maintenance and expansion of the Grid, as provided for in Republic Act No. 9511. For the avoidance of doubt, the Transmission Provider includes the System Operator.

Watt-hour meter

A device that measures and records the consumption or production of electricity.

ARTICLE II**ACCURACY LIMITS, TESTING AND OTHER REQUIREMENTS
FOR WATT-HOUR METERS****Section 5. General Principles**

The accuracy limits, testing and other requirements for watt-hour meters shall be based on the type of metering and its voltage level. This will ensure that all the metering practices of the Generators, TP, DUs and Redistributors are acceptable and based on existing metering standards, as prescribed under these Rules.

Section 6. Pre-Installation Testing/Certification of Watt-hour Meters

All watt-hour meters must be tested, certified and sealed by the ERC prior to installation in the customers' premises. Their accuracy limits shall be within the limits set under Section 7 of these Rules.

**Section 7. Watt-hour Meter Accuracy Limits and the corresponding
Applicable Rules and Regulations**

The accuracy limits of watt-hour meters shall be in accordance with the prescribed standard limits per meter type and voltage level as shown in Table 1.

The applicable metering-related rules and regulations to be followed by the Generators, TP, DUs and Redistributors shall be based on the type and voltage level of the metering installation. These rules and regulations pertain to metering point location, measurement, interval data, and other metering equipment, such as cabinets, enclosures, seals, test switch, conduits and wiring provisions.

Table-1: Meter Accuracy Limits and Applicable Rules and Regulations

Meter Type	Voltage Level	Accuracy limits	Applicable Metering Rules and regulations
Single phase self-contained meters, including 2-element set-up (e.g., Form 12 or Form 25)	600 Volts and below	The meter shall have an allowable average error within +/- 0.5% or better	Article V, Resolution No. 12, Series 2009
Three phase self-contained meters and all Instrument Transformer-rated meters	Below 69,000 Volts	The meter shall have an allowable average error within +/- 0.2% for IEC standard meters; or within +/- 0.2% for ANSI standard meters or better	Chapter 7 of the Philippine Distribution Code (PDC) / IEC 62053.22 2003-01 Edition / ANCI C12.20-2015
Three phase Instrument Transformer-rated meters	69,000 Volts and above	The meter shall have an allowable average error within +/- 0.2% for IEC standard meters; or within +/- 0.2% for ANSI standard meters or better	Chapter 9 of the Philippine Grid Code (PGC) / IEC 62053.22 2003-01 Edition / ANCI C12.20-2015

The actual modifications must be undertaken by the Generators, TP and DUs to comply with the new requirements under these Rules.

Section 8. In-Service Testing Requirements for Watt-hour Meter

All DU meters that are in service should be tested in accordance with the Statistical Sampling Program for In-service Meters, pursuant to Article VI of Resolution No. 12, Series of 2009 otherwise known as the “*Rules and Procedures for the Test and Maintenance of Electric Meters of Distribution Utilities,*”, as amended in Resolution No. 21, Series of 2013 and Resolution No 14, Series of 2017.

All Generators and TP meters that are in-service should be tested in accordance with Chapter 9 of the Philippine Grid Code (PGC) 2016 Edition.

ARTICLE III

ACCURACY LIMITS, TESTING AND OTHER REQUIREMENTS FOR INSTRUMENT TRANSFORMERS

Section 9. General Principles

The accuracy limits, testing and other requirements for instrument transformers shall be based on its voltage level. This will ensure that all the practices of Generators, TP, DUs and Redistributors are in accordance with existing metering standards, as prescribed under these Rules.

Section 10. Testing/Certification of Instrument Transformers

All instrument transformers of DUs must be tested and certified by the ERC prior to installation in the customers’ premises. ERC stickers shall be attached to the instrument transformers by the ERC as warranty that they are acceptable to be used in service. Their accuracy limits shall be within the limits set under Section 11 of these Rules.

All instrument transformers of the Generators and TP must be tested in accordance with Chapter 9 of the PGC.

Section 11. Accuracy Limits for Instrument Transformers and Applicable Rules and Regulations

The accuracy class of an instrument transformer will define its accuracy limits under certain prescribed conditions. The accuracy class of the Instrument Transformers is described in Table 2:

Table-2: Instrument Transformer Accuracy Class

Voltage Level	Instrument Transformer Accuracy class	Applicable Rules
Below 69,000 Volts	The instrument transformer shall have an accuracy class of 0.2 or better for Instrument Transformers compliant to IEC standards; or have an accuracy class of 0.3 or better for Instrument Transformers compliant to ANSI standards	Chapter 7 of the Philippine Distribution Code (PDC).
69,000 Volts and above	The instrument transformer shall have an accuracy class of 0.2 or better for Instrument Transformers compliant to IEC standards; or have an accuracy class of 0.3 or better for Instrument Transformers compliant to ANSI standards	Chapter 9 of the Philippine Grid Code (PGC)

For each of the accuracy class described under Table-2 above, the accuracy limits for Instrument Transformers compliant to ANSI or IEC standards are as follows:

Table-3a: ANSI Standard Accuracy Limits per Instrument Transformer Accuracy Class

Standard	Accuracy Class	100% Rated Current	10% Rated Current
ANSI IEEE C57.13	0.3	+/- 0.3%	+/-0.6%
ANSI IEEE C57.13.6	0.15	+/- 0.15%	+/-0.3%

Table-3b: IEC Standard Accuracy Limit per Instrument Transformer Accuracy Class

Standard	Accuracy Class	100% Rated Current	20% Rated Current	10% Rated Current
IEC 60044-1	0.2	+/- 0.2%	+/- 0.35%	+/- 0.75%

The actual modifications must be undertaken by the Generators, TP and DUs to comply with the new requirements under these Rules.

Section 12. Secondary Burden

The burden in each phase of the instrument transformers shall not exceed its specified burden. Instrument transformers shall be connected only to a revenue meter with a burden that will not affect the accuracy of the measurement. When installed in service, the connection of the leads shall be checked against the polarity markings of the instrument transformer using an industry-accepted methodology.

Section 13. Commissioning Test Requirements

Upon installation of all instrument transformers in the customers' premises, the Generators, TP and DUs shall conduct visual inspection of said facilities to ensure proper installation has been done and that the same is suitable for commissioning. The visual check will include comparing equipment nameplate data with the design specifications, checking the physical condition, equipment cleanliness, grounding and wiring continuity check. The Commissioning Test conducted by the Generators, TP and DUs may be witnessed by the customer and/or representatives.

Section 14. In-Service Testing Requirements

All instrument transformers should remain accurate while in-service. All instrument transformers used by Generators and TP that are in-service should be tested in accordance with Chapter 9 of the Philippine Grid Code (PGC) 2016 Edition. The Generators, TP and DUs or ERC shall conduct visual inspection of the instrument transformers to check for signs of physical damage, discolored terminals that may be due to overloading, change in texture or appearance of the insulation of the bushings

and other critical parts that has an effect on the accuracy of the metering installation. This inspection shall be done based on the maintenance program of Generators, TP and DUs.

Instrument transformers with signs of defects or abnormality shall be subjected to accuracy testing by ERC and concern entity. All in-service instrument transformers found to be defective shall be replaced as soon as practicable and shall be subjected to laboratory tests. Transformer correction factors, to be determined by ERC, shall be used while they are still not replaced.

ARTICLE IV

FINAL PROVISIONS

Section 15. Imposition of Fines and Penalties. – Violation of any of these Rules shall be subject to ERC Rules and Regulations and other existing applicable laws.

Section 16. Separability Clause. – If any of the foregoing amendments is declared unconstitutional or invalid, the other provisions which are not affected thereby shall remain in force and effect, unless such declaration would render the whole rules unenforceable or non-implementable.

Section 17. Repealing Clause. – All Rules and Guidelines, or portion thereof, issued by the ERC, which are inconsistent with these Rules are hereby repealed or modified accordingly.

Section 18. Effectivity. – These Rules shall take effect fifteen (15) days after its publication in a newspaper of general circulation in the country.