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IEC 62052-11:2020

DRAFT TANZANIA STANDARD

(Draft for comments only)

Electricity metering equipment - General requirements, tests and test conditions - Part 11: Metering equipment

TANZANIA BUREAU OF STANDARDS

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1 National Foreword

This draft Tanzania Standard has been prepared by the TBS Electrical Equipment Technical Committee, under the supervision of the Electrotechnical Divisional Standards Committee (EDC)

This draft Tanzania Standard is identical to International Standard **IEC 62052-11:2020** *metering equipment - General requirements, tests and test conditions - Part 11: Metering equipment,* which has been prepared by the International Electrotechnical Commission.

This draft standard cancels and replaces TZS 1628-1:2013 which has been technically revised.

2 Terminology and conventions

Some terminologies and certain conventions are not identical with those used in Tanzania standards; attention is drawn especially to the following: -

1) The comma has been used as a decimal marker for metric dimensions. In Tanzania Standards, it is current practice to use “full point” on the baseline as the decimal marker.

2) Where the words “International Standard(s)” appear, referring to this standard they should read “Tanzania Standard(s)”

ELECTRICITY METERING EQUIPMENT –

GENERAL REQUIREMENTS, TESTS AND TEST CONDITIONS –

Part 11: Metering equipment

1 Scope

This part of IEC 62052 specifies requirements and associated tests, with their appropriate conditions for type testing of AC and DC electricity meters. This document details functional, mechanical, electrical and marking requirements, test methods, and test conditions, including immunity to external influences covering electromagnetic and climatic environments.

NOTE 1 For other general requirements, such as safety, dependability, etc., see the relevant IEC 62052 or

IEC 62059 standards. For accuracy requirements and other requirements specific to class indices, see the relevant

IEC 62053 standards.

This document applies to electricity metering equipment designed to:

• measure and control electrical energy on electrical networks (mains) with voltage up to

1 000 V AC, or 1 500 V DC;

NOTE 2 For AC electricity meters, the voltage mentioned above is the line-to-neutral voltage derived from nominal

voltages. See IEC 62052-31:2015, Table 7.

NOTE 3 For meters designed for operation with LPITs, only the metering unit is considered a low voltage device. If

the LPITs are rated for voltages exceeding 1 000 V AC, or 1 500 V DC, the combination of the metering unit and

LPITs is not a low voltage device.

• have all functional elements, including add-on modules, enclosed in, or forming a single meter case with exception of indicating displays;

• operate with integrated displays (electromechanical or static meters);

• operate with detached indicating displays, or without an indicating display (static meters only);

• be installed in a specified matching sockets or racks;

• optionally, provide additional functions other than those for measurement of electrical energy.

Meters designed for operation with Low Power Instrument Transformers (LPITs as defined in the IEC 61869 series) may be tested for compliance with this document and the relevant IEC 62053 series documents only if such meters and their LPITs are tested together as directly connected meters.

NOTE 4 Modern electricity meters typically contain additional functions such as measurement of voltage magnitude, current magnitude, power, frequency, power factor, etc.; measurement of power quality parameters; load control functions; delivery, time, test, accounting, and recording functions; data communication interfaces and associated data security functions. The relevant standards for these functions may apply in addition to the requirements of this document. However, the requirements for such functions are outside the scope of this document.

NOTE 5 Product requirements for Power Metering and Monitoring Devices (PMDs) and measurement functions such as voltage magnitude, current magnitude, power, frequency, etc., are covered in IEC 61557-12. However, devices compliant with IEC 61557-12 are not intended to be used as billing meters unless they are also compliant with IEC 62052-11 and one or more relevant IEC 62053-xx particular requirements (accuracy class) standard.

NOTE 6 Product requirements for Power Quality Instruments (PQIs) are covered in IEC 62586-1. Requirements for power quality measurement techniques (functions) are covered in IEC 61000-4-30. Requirements for testing of the power quality measurement functions are covered in IEC 62586-2.

NOTE 7 The IEC TC13 strives to consider EMC phenomena that may occur in practice in meter installations and to amend its standards to ensure that an appropriate level of electromagnetic compatibility is specified for electricity metering equipment. To this end, IEC TC13 cooperates with the relevant IEC technical committees to characterize

electromagnetic phenomena, to define emission limits, immunity levels and immunity verification methods based on

which the appropriate test methods and requirements can be developed in the TC13 electricity metering equipment

standards.

This document is also applicable to auxiliary input and output circuits, operation indicators, and test outputs of equipment for electrical energy measurement.

NOTE 8 Some examples include pulse inputs and outputs, control inputs and outputs, and energy test outputs.

This document also covers the common aspects of accuracy testing such as reference conditions, repeatability and measurement of uncertainty.

This document does not apply to:

• meters for which the voltage line-to-neutral derived from nominal voltages exceeds 1 000 V AC, or 1 500 V DC;

• meters intended for connection with low power instrument transformers (LPITs as defined in the IEC 61869 series of standards) when tested without such transformers;

• metering systems comprising multiple devices (except of LPITs) physically remote from one another;

• portable meters;

NOTE 9 Portable meters are meters that are not permanently connected.

• meters used in rolling stock, vehicles, ships and airplanes;

• laboratory and meter test equipment;

• reference standard meters;

NOTE 10 Nominal values, accuracy classes, requirements and test methods for reference standard meters are

specified in IEC 62057-1: –.

• data interfaces to the register of the meter;

• matching sockets or racks used for installation of electricity metering equipment;

• any additional functions provided in electrical energy meters.

This document does not cover measures for the detection and prevention of fraudulent attempts to compromise a meter’s performance (tampering).

NOTE 11 Nevertheless, specific tampering detection and prevention requirements, and test methods, as relevant

for a particular market are subject to agreement between the manufacturer and the purchaser.

NOTE 12 Specifying requirements and test methods for fraud detection and prevention would be counterproductive,

as such specifications would provide guidance for potential fraudsters.

NOTE 13 There are many types of meter tampering reported from various markets; therefore, designing meters to

detect and prevent all types of tampering could lead to unjustified increase in costs of meter design, verification and

validation.

NOTE 14 Billing systems, such as smart metering systems, are capable of detecting irregular consumption patterns

and irregular network losses which enable discovery of suspected meter tampering.