EDC 1 (2843) DTZS
IEC 61869-1:2023

DRAFT TANZANIA STANDARD

(Draft for comments only)

Instrument transformers - Part 1: General requirements

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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 the International Standard IEC 61869-1:2023 Instrument transformers - Part 1: General requirements, which has been prepared by the International Electrotechnical Commission.

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)”

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INSTRUMENT TRANSFORMERS –

Part 1: General requirements

1 Scope

This part of IEC 61869 is applicable to newly manufactured instrument transformers intended for applications where the nominal voltage is higher than 1 kV AC or 1,5 kV DC, with an analogue or a digital secondary signal for measuring, protection and control purposes, with rated frequencies from 15 Hz to 400 Hz, or for DC applications.

NOTE 1 A bushing type current transformer, although having no primary insulation level for itself is often placed on

a system with a nominal voltage > 1 kV AC or > 1,5 kV DC and therefore falls within the scope of this document.

Example: CT placed around an HV bushing or a cable.

The general requirements for instrument transformers for applications in LV systems (nominal voltage ≤ 1 kV AC or ≤ 1,5 kV DC) are covered by IEC 61869-201.

This part of IEC 61869 is a product family standard and covers general requirements only. For each type of instrument transformer, the product standard is composed of this document and the relevant specific product standard.

This part of IEC 61869 contains the requirements for the limits of the errors both for analogue and digital secondary signals. The other characteristics of a digital interface for instrument transformer are standardised in IEC 61869-9 as an application of the IEC 61850 horizontal standard series, covering communication networks and systems for power utility automation.

This part of IEC 61869 considers bandwidth requirements. The accuracy requirements on harmonics and requirements for the anti-aliasing filter are specified in 5.7.

In the case of an LPIT, the general block diagram of single-phase devices is given in Figure 1. According to the technology, it is not always necessary that all parts described in Figure 1 be included in the instrument transformer.

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2 Normative references

The following documents are referred to in the text in such a way that some or all of their content

constitutes requirements of this document. For dated references, only the edition cited applies.

For undated references, the latest edition of the referenced document (including any

amendments) applies.

IEC 60060-1, High-voltage test techniques – Part 1: General definitions and test requirements

IEC 60068-2-1, Environmental testing – Part 2-1: Tests – Test A: Cold

IEC 60068-2-2:2007, Environmental testing – Part 2-2: Tests – Test B: Dry heat

IEC 60068-2-6, Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)

IEC 60068-2-11, Environmental testing – Part 2-11: Tests – Test Ka: Salt mist

IEC 60068-2-17, Basic environmental testing procedures – Part 2-17: Tests – Test Q: Sealing

IEC 60068-2-27:2008, Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock

IEC 60068-2-47, Environmental testing – Part 2-47: Tests – Mounting of specimens for vibration

impact and similar dynamic tests

IEC 60068-2-57:2013, Environmental testing – Part 2-57: Tests – Test Ff: Vibration – Timehistory and sine-beat method

IEC 60068-2-75, Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests

IEC 60068-2-78:2012, Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady

state

IEC 60068-3-3:2019, Environmental testing – Part 3-3: Supporting documentation and guidance

– Seismic test methods for equipment

IEC 60071-1:2019, Insulation co-ordination – Part 1: Definitions, principles and rules

IEC 60071-2:2018, Insulation co-ordination – Part 2: Application guidelines

IEC 60085, Electrical insulation – Thermal evaluation and designation

IEC 60270:2000, High-voltage test techniques – Partial discharge measurements

IEC 60270:2000/AMD1:2015

IEC 60296, Fluids for electrotechnical applications – Mineral insulating oils for electrical

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equipment

IEC 60376, Specification of technical grade sulphur hexafluoride (SF6) and complementary gases to be used in its mixtures for use in electrical equipment

IEC 60455 (all parts), Resin based reactive compounds used for electrical insulation

IEC 60475, Method of sampling insulating liquids

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IEC 60480, Specifications for the re-use of sulphur hexafluoride (SF6) and its mixtures in electrical equipment

IEC 60529:1989, Degrees of protection provided by enclosures (IP Code)

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013

IEC 60603-7-1, Connectors for electronic equipment – Part 7-1: Detail specification for 8-way, shielded, free and fixed connectors

IEC 60695-1-10, Fire hazard testing – Part 1-10: Guidance for assessing the fire hazard of electrotechnical products – General guidelines

IEC 60695-1-11, Fire hazard testing – Part 1-11: Guidance for assessing the fire hazard of electrotechnical products – Fire hazard assessment

IEC 60794-2:2017, Optical fibre cables – Part 2: Indoor cables – Sectional specification

IEC 60794-3, Optical fibre cables – Part 3: Outdoor cables – Sectional specification

IEC TS 60815-1:2008, Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 1: Definitions, information and general principles

IEC TS 60815-2:2008, Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 2: Ceramic and glass insulators for a.c. systems

IEC TS 60815-3:2008, Selection and dimensioning of high-voltage insulators intended for use in polluted conditions – Part 3: Polymer insulators for a.c. systems

IEC 60867, Insulating liquids – Specifications for unused liquids based on synthetic aromatic

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hydrocarbons

IEC TR 61000-4-1, Electromagnetic compatibility (EMC) – Part 4-1: Testing and measurement techniques – Overview of IEC 61000-4 series

IEC 61000-4-2, Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test

IEC 61000-4-3, Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test

IEC 61000-4-4, Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test

IEC 61000-4-5:2014, Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test

IEC 61000-4-5:2014/AMD1:2017

IEC 61000-4-6, Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields

IEC 61000-4-8, Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test

IEC 61000-4-9, Electromagnetic compatibility (EMC) – Part 4-9: Testing and measurement techniques – Impulse magnetic field immunity test

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IEC 61000-4-10, Electromagnetic compatibility (EMC) – Part 4-10: Testing and measurement techniques – Damped oscillatory magnetic field immunity test

IEC 61000-4-11, Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase

IEC 61000-4-13, Electromagnetic compatibility (EMC) – Part 4-13: Testing and measurement techniques – Harmonics and interharmonics including mains signalling at AC power port, low

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frequency immunity tests

IEC 61000-4-16, Electromagnetic compatibility (EMC) – Part 4-16: Testing and measurement techniques – Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz

IEC 61000-4-17, Electromagnetic compatibility (EMC) – Part 4-17: Testing and measurement techniques – Ripple on DC input power port immunity test

IEC 61000-4-18:2019, Electromagnetic compatibility (EMC) – Part 4-18: Testing and measurement techniques – Damped oscillatory wave immunity test

IEC 61000-4-29, Electromagnetic compatibility (EMC) – Part 4-29: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations on DC input power port immunity tests

IEC 61000-6-4:2018, Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments

IEC 61076-2-101, Connectors for electronic equipment – Product requirements – Part 2-101: Circular connectors – Detail specification for M12 connectors with screw-locking

IEC 61083-1, Instruments and software used for measurement in high-voltage and high-current tests – Part 1: Requirements for instruments for impulse tests

IEC 61099, Insulating liquids – Specifications for unused synthetic organic esters for electrical purposes

IEC 61181, Mineral oil-filled electrical equipment – Application of dissolved gas analysis (DGA) to factory tests on electrical equipment

IEC 61462, Composite hollow insulators – Pressurized and unpressurized insulators for use in electrical equipment with rated voltage greater than 1 000 V – Definitions, test methods and acceptance criteria and design recommendations

IEC 61850-7-4, Communication networks and systems for power utility automation – Part 7-4: Basic communication structure – Compatible logical node classes and data object classes

IEC 61869-9:2016, Instrument transformers – Part 9: Digital interface for instrument

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transformers

IEC 61869-99, Instrument transformers: Glossary

IEC 62155, Hollow pressurized and unpressurized ceramic and glass insulators for use in electrical equipment with rated voltages greater than 1 000 V

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IEC 62217:2012, Polymeric HV insulators for indoor and outdoor use – General definitions, test methods and acceptance criteria

IEC 62271-4:2022, High-voltage switchgear and controlgear – Part 4: Handling procedures for gases for insulation and/or switching

IEC 62271-100, High-voltage switchgear and controlgear – Part 100: Alternating-current circuitbreakers

IEC 62271-203:2022, High-voltage switchgear and controlgear – Part 203: Gas-insulated metalenclosed switchgear for rated voltages above 52 kV

IEC 62770, Fluids for electrotechnical applications – Unused natural esters for transformers and similar electrical equipment

IEC 63012, Insulating liquids – Unused modified or blended esters for electrotechnical applications

CISPR TR 18-2, Radio interference characteristics of overhead power lines and high-voltage equipment – Part 2: Methods of measurement and procedure for determining limits

ISO/IEC/IEEE 21451-4, Information technology – Smart transducer interface for sensors and actuators – Part 4: Mixed-mode communication protocols and Transducer Electronic Data Sheet (TEDS) formats

ISO 4628-3, Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 3: Assessment of degree of rusting

ISO 22479, Corrosion of metals and alloys – Sulfur dioxide test in a humid atmosphere (fixed gas method)

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