SLOVENSKI STANDARD
oSIST prEN IEC 62057-3:2023

01-februar-2023

Merilna oprema, tehnike in postopki za števce električne energije - 3. del: Avtomatski preskusni sistem za števce (AMTU)

Test equipment, techniques and procedures for electrical energy meters - Part 3: Automatic Meter Testing System (AMTS)

Ta slovenski standard je istoveten z: **prEN IEC 62057-3:2022**

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities

oSIST prEN IEC 62057-3:2023 **en**

13/1874/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 62057-3 ED1**	
DATE OF CIRCULATION: **2022-11-25**	CLOSING DATE FOR VOTING: **2023-02-17**
SUPERSEDES DOCUMENTS: **13/1849/CD, 13/1872/CC**	

IEC TC 13 : ELECTRICAL ENERGY MEASUREMENT AND CONTROL	
SECRETARIAT: Hungary	SECRETARY: Mr Bela Bodi
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING **Attention IEC-CENELEC parallel voting** The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

IEC 62057-3 ED1 Test equipment, techniques and procedures for electrical energy meters - Part 3: Automatic Meter Testing System (AMTS)

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

IEC 62057-3 ED1 TEST EQUIPMENT, TECHNIQUES AND PROCEDURES FOR ELECTRICAL ENERGY METERS

Part 3: Automatic meter testing system (AMTS)

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 62057-3 has been prepared by IEC technical committee 13: Electrical energy measurement and control. It is an International Standard.

The text of this International Standardis based on the following documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

98 The committee has decided that the contents of this document will remain unchanged until the
99 stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to
100 the specific document. At this date, the document will be

101 • reconfirmed,
102 • withdrawn,
103 • replaced by a revised edition, or
104 • amended.
105

INTRODUCTION

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent. IEC takes no position concerning the evidence, validity, and scope of this patent right.

The holder of this patent right has assured IEC that s/he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with IEC. Information may be obtained from the patent database available at http://patents.iec.ch.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those in the patent database. IEC shall not be held responsible for identifying any or all such patent rights.

The following statements help to understand this standard, which will be deleted in the final publication.

-This document aims to define the basic performance requirements for AMTS, while the construction mode and the technical details depend on the agreement between manufacturers and users, so as not to limit or inhibit innovation and technological advancement;

-This document refers to the existing standards to the maximum extent so that the consistency in IEC community could be ensured.

IEC 62057-3 ED1 TEST EQUIPMENT, TECHNIQUES AND PROCEDURES FOR ELECTRICAL ENERGY METERS

Part 3: Automatic meter testing system (AMTS)

1 Scope

This part of IEC 62057 applies to Automatic Meter Testing System (AMTS) permanently installed in a controlled environment. It covers the functions, technical requirements and acceptance methods of AMTS. And it applies to newly manufactured AMTS to test static active/reactive energy meters on 50 Hz or 60 Hz networks with an AC voltage up to 1000V (phase to neutral).

NOTE The controlled environment refers to places that meet the test requirements of meters.

This document defines the kind of AMTS that can continuously and automatically carry out all the test items specified in IEC 62058-31:2008, including visual inspection, AC voltage test, no-load condition, starting current, accuracy and meter constant test.

This document does not apply to:

- data interfaces to the meter and test procedures of data interface；
- industrial controllers, industrial personal computers, and servers supplied along with the AMTS.

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 60204-1:2016, *Safety Of Machinery - Electrical Equipment Of Machines - Part 1: General Requirements*

IEC 60417: 2002, *Graphical symbols for use on equipment*

IEC 61010-1: 2010, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*

IEC 61140: 2016, *Protection against electric shock – Common aspects for installation and equipment*

IEC 61180: 2016, *High-voltage test techniques for low-voltage equipment - Definitions, test and procedure requirements, test equipment*

IEC 61326-1: 2012, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements*

IEC 62052-11: 2020, *Electricity Metering Equipment (AC) - General requirements, tests and test conditions - Part 11- Metering equipment*

IEC 62052-31: 2015, *Electricity metering equipment (AC) General requirements, Tests and test conditions – Part 31: Product safety requirements and tests*

IEC 62053-21: 2020, *Electricity metering equipment - Particular requirements - Part 21: Static meters for AC active energy (classes 0,5, 1 and 2)*

IEC 62053-22: 2020, *Electricity Metering Equipment (AC) - Particular requirements - Part 22: Static meters for active energy (classes 0,1S, 0,2 S and 0,5 S)*

IEC 62053-23: 2020, *Electricity metering equipment (AC) – Particular requirements – Part 23: Static meters for reactive energy (classes 2 and 3)*

IEC 62053-24: 2020, *Electricity metering equipment (AC) – Particular requirements – Part 24: Static meters for reactive energy (classes 0,5 S, 1 S and 1)*

IEC 62054-21: 2004, *Electricity metering (AC). Tariff and load control– Part 21: Particular requirements for time switches*

IEC 62057-1(CDV), *Test equipment, techniques and procedures for electrical energy meter – Part 1: Stationary Meter Test Unit (MTU)*

IEC 62058-31: 2008, *Electricity metering equipment (AC) - Acceptance inspection – Part 31: Particular requirements for static meters for active energy (classes 0,2 S,0,5 S,1 and 2)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
device under test (DUT)
meter intended to measure active / reactive / apparent energy by integrating active / reactive / apparent power with respect to time

Note1 to entry: For the definition of various types of energy meters and their elements, see IEC62052-11, IEC 62053-21, IEC 62053-22, IEC62053-23, and IEC 62053-24.

[MODIFIED: IEC 62057-1, 3.1.1]

3.2
meter test unit (MTU)
assembly of sources, frequency generator, reference or working standard, and error calculation and indication system to supply the required test values to the DUT(s) and to measure, calculate and display the error of the DUT(s)

[SOURCE: IEC 62057-1, 3.1.2]

3.3
automatic meter testing unit (AMTU)
MTU which conducts, controls and monitors the desired function(s) or activity(ies) of meter testing through computer controlled software

[SOURCE: IEC 62057-1, 3.1.3]

3.4
automatic meter testing system (AMTS)
a test system which consists of visual inspection unit(s), AC voltage test unit(s), AMTU(s), conveying unit(s) and connecting/disconnecting unit(s), and continuously conducts preset DUT test items and activities under computer controlled software without human intervention

3.5
connection and disconnection
process of electrical contact and separation between meter terminals and test equipment in automatic manner

3.6
conveying
process of DUTs being loaded into AMTS, conveyed in AMTS and unloaded from AMTS by non-manual operation

4 General

An AMTS has the basic functions of visual inspection, AC voltage test, accuracy test, conveying and connecting/disconnecting.

All test items specified in IEC 62058-31:2008 clause 5 can be carried out by AMTS continuously and automatically, and all the information during the tests can be recorded.

The tests shall be carried out according to the sequence defined in Table 4 of IEC 62058-31:2008.

Measures shall be taken by AMTS to deal with those DUTs detected as unqualified during the test.

When an abnormality occurs, the AMTS shall recover to its normal operation promptly.

To ensure the accuracy of test results, electromagnetic isolation measures such as sufficient space or electromagnetic shielding should be taken between each test position.

The relevant laws and regulations of the country need to be considered in the essential health and safety requirements relating to the design of AMTS.

A recommended typical schematic diagram of AMTS is shown in Annex A.

5 Functional requirements

5.1 Visual inspection of DUTs

AMTS shall automatically identify the DUTs' marks and appearances, and give results according to the requirements of IEC 62058-31:2008, 5.2.

5.2 AC voltage test of DUTs

AMTS shall automatically carry out the AC voltage test on DUTs according to IEC 62052-31:2015, 6.10.4.3.4.

The requirements of an AC voltage generator shall be in accordance with IEC 61180:2016, clause 6.

During the tests, in case the leakage current of the DUT at a test position reaches the limits of tripping current, the test voltage at that position shall be automatically and promptly cut down, without disrupting the tests at other positions.

5.3 Accuracy test of DUTs

The requirements, test conditions, and procedures of IEC 62057-1 apply.

The tests of no-load condition, starting current, accuracy and meter constant shall be carried out automatically according to the requirements of IEC 62053-21:2020, clause 7, IEC 62053-22: 2020 clause 7, IEC 62053-23:2020 clause 7 or IEC 62053-24:2020 clause 7.

AMTS shall be able to detect the condition of the broken circuit occurred at a test position, and then short that circuit and mark the condition.

For the DUTs with time switches, the time-keeping accuracy test shall be carried out according to IEC 62054-21 or relevant standards.

5.4 Conveying

AMTS shall meet the following functional requirements: