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Övervakande och mätande system för insamling och analys av data – Del 1: Fordringar på utrustning

*Monitoring and measuring systems used for data collection, aggregation and analysis –
Part 1: Device requirements*

Som svensk standard gäller europastandarden EN IEC 62974-1:2024. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62974-1:2024.

Nationellt förord

Europastandarden EN IEC 62974-1:2024

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 62974-1, Second edition, 2024 - Monitoring and measuring systems used for data collection, aggregation and analysis – Part 1: Device requirements**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 62974-1, utg 1:2018 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2027-12-31.

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English Version

Monitoring and measuring systems used for data collection,
aggregation and analysis - Part 1: Device requirements
(IEC 62974-1:2024)

Systèmes de surveillance et de mesure utilisés pour la
collecte, l'agrégation et l'analyse de données - Partie 1:
Exigences relatives aux dispositifs
(IEC 62974-1:2024)

Erfassungs- und Messsysteme zur Datenerfassung, -
Übertragung und -Analyse - Teil 1: Anforderungen an die
Geräte
(IEC 62974-1:2024)

This European Standard was approved by CENELEC on 2024-10-16. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 85/920/FDIS, future edition 2 of IEC 62974-1, prepared by TC 85 "Measuring equipment for electrical and electromagnetic quantities" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62974-1:2024.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2025-12-31 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2027-12-31 document have to be withdrawn

This document supersedes EN 62974-1:2017 and all of its amendments and corrigenda (if any).

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62974-1:2024 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60068-1:2013	NOTE	Approved as EN 60068-1:2014 (not modified)
IEC 60068-2-30	NOTE	Approved as EN 60068-2-30
IEC 60364-8-1:2019	NOTE	Approved as HD 60364-8-1:2019 (not modified)
IEC 60950 (series)	NOTE	Approved as EN 60950 (series)
IEC 61557-12	NOTE	Approved as EN IEC 61557-12
ISO 50001:2018	NOTE	Approved as EN ISO 50001:2018 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-1	2007	Environmental testing - Part 2-1: Tests - Test A: Cold	EN 60068-2-1	2007
IEC 60068-2-2	2007	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	2007
IEC 60068-2-6	2007	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	2008
IEC 60068-2-14	2009	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	2009
IEC 60068-2-27	2008	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock	EN 60068-2-27	2009
IEC 60068-2-78	2012	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	2013
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
-	-		+ corrigendum May	1993
+ A1	1999		+ A1	2000
+ A2	2013		+ A2	2013
IEC 61000-4-4	2012	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	2012
IEC 61000-4-5	2014	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	2014
+ A1	2017		+ A1	2017
IEC 61000-4-8	2009	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	EN 61000-4-8	2010

EN IEC 62974-1:2024 (E)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61000-4-11	2020	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	EN IEC 61000-4-11	2020
IEC 61010-1	2010	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements	EN 61010-1	2010
+ A1 (mod)	2016		+ A1	2019
IEC 61131-2	2017	Industrial-process measurement and control - Programmable controllers - Part 2: Equipment requirements and tests	-	-
IEC 61326-1	2020	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements	EN IEC 61326-1	2021
IEC 62052-11	2020	Electricity metering equipment - General requirements, tests and test conditions - Part 11: Metering equipment	EN IEC 62052-11	2021
-	-		+ A12	2024
IEC 62262	2002	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)	EN 62262	2002
+ AMD1	2021		+ A1	2021

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Monitoring and measuring systems used for data collection, aggregation and analysis –
Part 1: Device requirements**

**Systèmes de surveillance et de mesure utilisés pour la collecte, l'agrégation et
l'analyse de données –
Partie 1: Exigences relatives aux dispositifs**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**MONITORING AND MEASURING SYSTEMS USED
FOR DATA COLLECTION, AGGREGATION AND ANALYSIS –****Part 1: Device requirements****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.
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IEC 62974-1 has been prepared by IEC technical committee 85: Measuring equipment for electrical and electromagnetic quantities. It is an International Standard.

This second edition cancels and replaces the first edition published in 2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) the performance criteria have been reviewed;
- b) EMC and safety requirements have been improved;
- c) mechanical requirements have been clarified and amended.

The text of this International Standard is based on the following documents:

Draft	Report on voting
85/920/FDIS	85/929/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.

A list of all parts in the IEC 62974 series, published under the general title *Monitoring and measuring systems used for data collection, aggregation and analysis*, can be found on the IEC website.

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/publications.

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

- reconfirmed,
- withdrawn, or
- revised.

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INTRODUCTION

The use of electrical energy needs to be optimised worldwide to increase the efficient use of available energy sources, for enhanced competitiveness, and for reducing greenhouse gas emissions and other related environmental impacts.

Efficient use of energy sources implies better energy management leading to a necessary improvement of energy performance, particularly in terms of efficiency, use and consumption. Aggregating energy data and ensuring its availability is key to providing an energy management system for organizations.

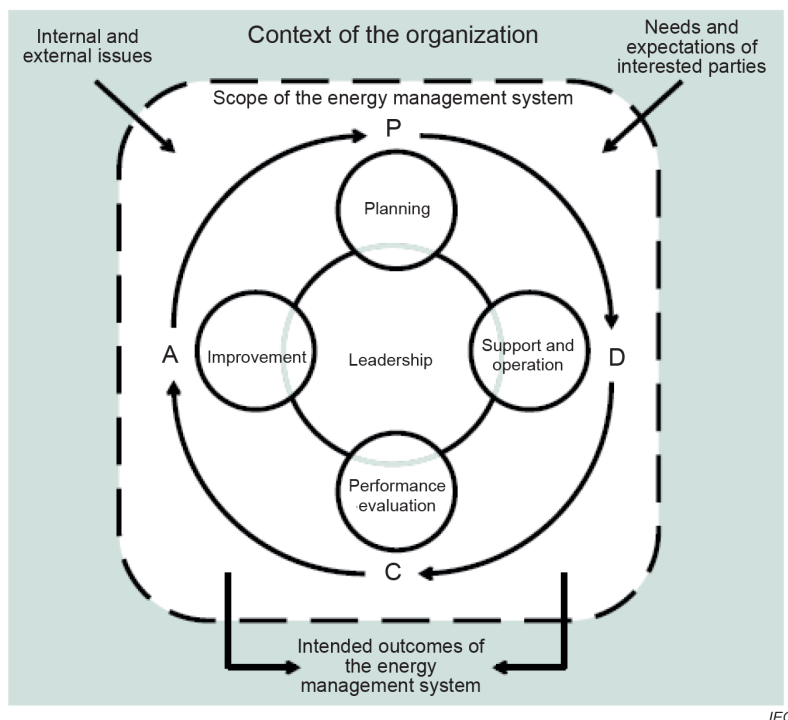
Energy management systems described in documents such as ISO 50001, ISO 50002, ISO 50006, refer to the measurement of energy as an important improvement of energy performance.

ISO 50001:2018 includes a requirement to "implement an energy data collection plan [...] and its measurement and monitoring equipment" to enable the organization to demonstrate energy performance improvement.

Figure 1 shows the link between the ISO 50001:2018 PDCA model and the continuous improvement of this data collection.

In the context of energy management, the Plan-Do-Check-Act (PDCA) approach (see Figure 1) can be outlined as follows:

- Plan: understand the context of the organization, establish an energy policy and an energy management team, consider actions to address risks and opportunities, conduct an energy review, identify significant energy uses (SEUs) and establish energy performance indicators (EnPIs), energy baseline(s) (EnBs), objectives and energy targets, and action plans necessary to deliver results that will improve energy performance in accordance with the organization's energy policy.
- Do: implement the action plans, operational and maintenance controls, and communication, ensure competence and consider energy performance in design and procurement.
- Check: monitor, measure, analyse, evaluate, audit and conduct management review(s) of energy performance and the EnMS.
- Act: take actions to address nonconformities and continually improve energy performance and the EnMS.



[SOURCE: ISO 50001:2018, reproduced with the permission of the authors]

Figure 1 – Plan-Do-Check-Act Cycle

IEC 60364-8-1 provides electrical installation rules for overall energy efficiency functional aspects. It defines requirements, measures and recommendations for the design, erection, operation and verification of all types of low voltage electrical installation including local production and storage of energy for optimizing the overall efficient use of electricity. In particular, it provides recommendations and requirements for the implantation of measurement and data logging devices in low voltage electrical installations, as defined in IEC 62974-1, to improve electrical energy efficiency (EEE) and make energy demand forecasts.

What is not known cannot be changed, and what is not measured is not known. Consequently, there is an increasing need to measure energy within the installations to:

- identify energy saving opportunities; or
- monitor energy performance indicators; or
- educate users.

The measurement data can be gathered manually by employees or automatically by dedicated devices.

Manual data collection can be a restrictive and complicated process to implement. In such a case, measurements would need to be collected by employees at a defined frequency, with a provision for risks of absences being made (vacation, sick leave, etc.), provided the measurements are relevant (number of measurement points to collect) and provided measurements can be relatively coherent (time synchronicity).

This is why data collection should be performed on a fixed schedule and the measurement data relevant to assess the required performance. Commonly, to avoid manual data collection, dedicated devices are used for collection, aggregation and sometimes analysis of measured data. These devices are directly linked to the different measurement devices in the installation to upload or download the energy data. Some typical architectures are given in Annex A.

MONITORING AND MEASURING SYSTEMS USED FOR DATA COLLECTION, AGGREGATION AND ANALYSIS –

Part 1: Device requirements

1 Scope

This part of IEC 62974 specifies product and performance requirements for devices that fall under the heading of "monitoring and measuring systems used for data collection, aggregation and analysis", for industrial, commercial, and similar use rated below or equal to 1 kV AC and 1,5 kV DC.

These devices are fixed and are intended to be used indoors as panel-mounted devices, or as modular devices fixed on a DIN rail, or as housing devices fixed on a DIN rail, or as devices fixed by other means inside a cabinet.

These devices are used to upload or download information (energy measured on loads, power metering and monitoring data, temperature information, etc.), mainly for energy efficiency purposes. These devices are known as energy servers (ESE), energy data loggers (EDL), data gateways (DGW) and I/O data concentrators (IODC) and are grouped together under the family name of Data Management Devices (DMD).

NOTE These systems are embedded or can be connected to a software application capable of consolidating data and delivering automatic analysis. Automatic analysis can include calculation of energy baselines or energy performance indicators as requested for the energy management system required by ISO 50001 or can be used during energy audits as defined in ISO 50002, or can be used in electrical energy efficiency management systems (EEMS) for monitoring an installation complying with IEC 60364-8-1 for the efficient use of electricity. These devices can also be used for certification according to labels such as LEED, BREEAM, HQE, etc.

This document does not cover:

- devices used only in the consumer market (living quarters) or household;
- devices used in the smart metering infrastructure (e.g. smart meters);
- devices used in the smart grid infrastructure;
- devices used as IT servers in the information technology business;
- power metering and monitoring devices (PMD);
- I/O data concentrators already covered by a specific product standard;
- communication protocols and interoperability;
- power quality instruments (PQI);
- software used for the data collection and analysis of the power quality for the supply side.

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 60068-2-1:2007, *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 60068-2-6:2007, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-14:2009, *Environmental testing – Part 2-14 – Tests – Test N: Change of temperature*

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

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

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

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013

IEC 61000-4-4:2012, *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 61000-4-8:2009, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and measurement techniques – Power frequency magnetic field immunity test*

IEC 61000-4-11:2020, *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 61010-1:2010, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*

IEC 61010-1:2010/AMD1:2016

IEC 61131-2:2017, *Industrial-process measurement and control – Programmable controllers – Part 2: Equipment requirements and tests*

IEC 61326-1:2020, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements*

IEC 62052-11:2020, *Electricity metering equipment – General requirements, tests and test conditions – Part 11: Metering equipment*

IEC 62262:2002, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

IEC 62262:2002/AMD1:2021