

|            |                                                                                                                               |                                              |
|------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| <b>STN</b> | <b>Monitorovacie a meracie systémy používané<br/>na zber, agregáciu a analýzu údajov<br/>Časť 1: Požiadavky na zariadenia</b> | <b>STN<br/>EN IEC 62974-1</b><br><br>35 6240 |
|------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|

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

Táto norma obsahuje anglickú verziu európskej normy.

This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 03/25

Obsahuje: EN IEC 62974-1:2024, IEC 62974-1:2024

Oznámením tejto normy sa od 31.12.2027 ruší

STN EN 62974-1 (35 6240) z decembra 2017

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Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2025

Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.



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NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN IEC 62974-1**

December 2024

ICS 17.220.20

Supersedes EN 62974-1:2017

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)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

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

**EN IEC 62974-1:2024 (E)****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).

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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](http://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        |



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# 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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IEC 62974-1

Edition 2.0 2024-08

# 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**

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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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

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- reconfirmed,
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- 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.

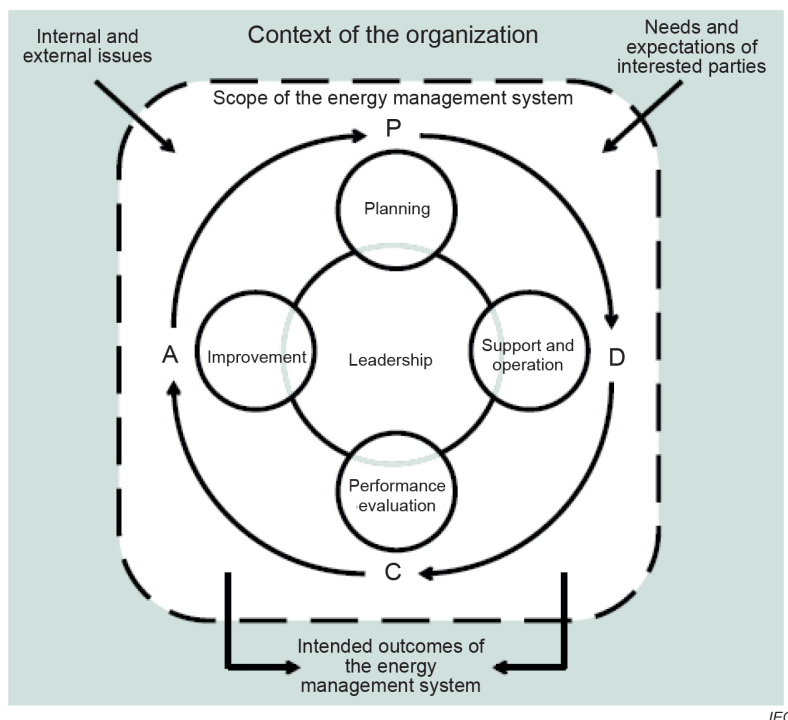
Energy management systems described in documents such as ISO 50001, ISO 50002, ISO 50006, refer to the measurement of energy as an important improvement of energy performance.

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

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**