



SLOVENSKI STANDARD

oSIST prEN IEC 62974-1:2023

01-oktober-2023

Sistemi za nadzorovanje in merjenje, namenjeni za zbiranje podatkov, nabiranje in analize podatkov - 1. del: Zahteve za napravo

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

Erfassungs- und Messsysteme zur Datenerfassung, -Übertragung und -Analyse - Teil 1: Anforderungen an die Geräte

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

Ta slovenski standard je istoveten z: **prEN IEC 62974-1:2023**

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
27.015	Energijska učinkovitost. Ohranjanje energije na splošno	Energy efficiency. Energy conservation in general
35.080	Programska oprema	Software

oSIST prEN IEC 62974-1:2023

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85/886/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

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DATE OF CIRCULATION: 2023-09-01	CLOSING DATE FOR VOTING: 2023-11-24
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IEC TC 85 : MEASURING EQUIPMENT FOR ELECTRICAL AND ELECTROMAGNETIC QUANTITIES	
SECRETARIAT: China	SECRETARY: Ms Guiju HAN
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 13,SC 23K,TC 38,TC 64,TC 121,SC 121B	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING
<p>Attention IEC-CENELEC parallel voting</p> <p>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.</p> <p>The CENELEC members are invited to vote through the CENELEC online voting system.</p>	

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TITLE:

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

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

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83 INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 1: Device requirements

FOREWORD

- 92 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising
93 all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international
94 co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and
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121 indispensable for the correct application of this publication.
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123 rights. IEC shall not be held responsible for identifying any or all such patent rights.

124 International Standard IEC 62974-1 has been prepared by IEC technical committee 85:
125 Measuring equipment for electrical and electromagnetic quantities.

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

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

- 129 • the performance criteria have been reviewed;
- 130 • EMC and Safety requirements have been improved;
- 131 • mechanical requirements have been clarified and amended.

132

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135

136 The text of this standard is based on the following documents:

FDIS	Report on voting
85/xxx/FDIS	85/xxx/RVD

137

138 Full information on the voting for the approval of this International Standard can be found in the
139 report on voting indicated in the above table.

140 This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

- 144 • reconfirmed,
- 145 • withdrawn,
- 146 • replaced by a revised edition, or
- 147 • amended.

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INTRODUCTION

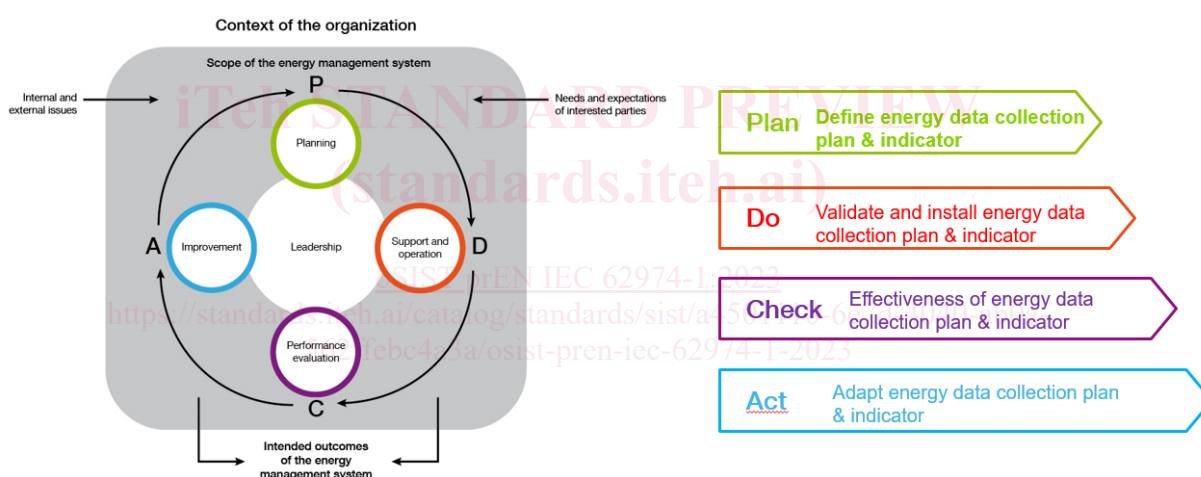
152 The use of electrical energy needs to be optimised worldwide to increase the efficient use of
 153 available energy sources, for enhanced competitiveness, and for reducing greenhouse gas
 154 emissions and other related environmental impacts.

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

159 Energy management systems described in documents such as ISO 50001, ISO 50002, ISO
 160 50006, refer to the measurement of energy as an important improvement of energy performance.

161 ISO 50001:2018 standard requires to “implement an energy data collection plan ... and its
 162 measurement and monitoring equipment” to enable the organization to demonstrate energy
 163 performance improvement.

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



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167

168 **Figure 1 - Plan-Do-Check-Act Cycle ISO 50001 and data collection**

169

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

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

- 182 • Identify energy saving opportunities or
183 • Monitor energy performance indicators or
184 • Educate users.

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

187 Manual data collection can be a restrictive and complicated process to implement.
188 Measurements need to be collected by employees at a defined frequency, provided despites
189 risks of absences are accounted for (vacation, off sick, etc.), provided the measurements are
190 relevant (number of measurement points to collect) and provided measurements can be
191 relatively coherent (time synchronicity).

192 Commonly, to avoid manual data collection, dedicated devices are used for collection, gathering
193 and sometimes analysis of measured data. These devices are directly linked to the different
194 measurement devices in the installation to upload or download the energy data. Some typical
195 architectures are given in Annex A.

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

Part 1: Device requirements

1 Scope

207 This part of IEC 62974 specifies product and performance requirements for devices that fall
208 under the heading of “monitoring and measuring systems used for data collection, gathering
209 and analysis”, for industrial, commercial and similar use rated below or equal to 1 kV AC and
210 1,5 kV DC.

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

214 These devices are used to upload or download information (energy measured on loads, power
215 metering and monitoring data, temperature information, etc.), mainly for energy efficiency
216 purposes. These devices are known as energy servers, energy data loggers, data gateways
217 and I/O data concentrators.

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

224

225 This standard does not cover:

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

2 Normative references

236 The following documents are referred to in the text in such a way that some or all of their content
237 constitutes requirements of this document. For dated references, only the edition cited applies.
238 For undated references, the latest edition of the referenced document (including any
239 amendments) applies.

240 IEC 60068-1:2013, *Environmental testing – Part 1: General and guidance*

241 IEC 60068-2-1:2007, *Environmental testing – Part 2-1: Tests – Test A: Cold*

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- 242 IEC 60068-2-2:2007, *Environmental testing – Part 2-2: Tests – Tests B: Dry heat*
- 243 IEC 60068-2-6:2007, *Environmental testing – Part 2-6: Tests - Test Fc: Vibration (sinusoidal)*
- 244 IEC 60068-2-14:2009, *Environmental testing – Part 2-14 – Tests – Test N: Change of*
245 *temperature*
- 246 IEC 60068-2-27:2008, *Environmental testing – Part 2-27: Tests – Test Ea and guidance:*
247 *Shock*
- 248 IEC 60068-2-78:2012, *Environmental testing – Part 2-78 – Tests – Test Cab: Damp heat,*
249 *steady state*
- 250 IEC 60364-8-1:2019, *Low-voltage electrical installations – Part 8-1: Energy efficiency*
- 251 IEC 60529:2002, *Degrees of protection provided by enclosures (IP Code)*
- 252 IEC 61000-4-4:2012, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and*
253 *measurement techniques – Electrical fast transient/burst immunity test*
- 254 IEC 61000-4-5:2014/AMD1:2017, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and*
255 *measurement techniques – Surge immunity test*
- 256 IEC 61000-4-8:2009, *Electromagnetic compatibility (EMC) – Part 4-8: Testing and*
257 *measurement techniques – Power frequency magnetic field immunity test*
- 258 IEC 61000-4-11:2020, *Electromagnetic compatibility (EMC) – Part 4-11: Testing and*
259 *measurement techniques – Voltage dips, short interruptions and voltage variations immunity*
260 *tests*
- 261 IEC 61010-1:2010/AMD1:2016/COR1:2019, *Safety requirements for electrical equipment for*
262 *measurement, control, and laboratory use – Part 1: General requirements*
- 263 IEC 61131-2:2003, *Programmable controllers – Part 2: Equipment requirements and tests*
- 264 IEC 61326-1:2020, *Electrical equipment for measurement, control and laboratory use – EMC*
265 *requirements – Part 1: General requirements*
- 266 IEC 62052-11:2020, *Electricity metering equipment – General requirements, tests and test*
267 *conditions – Part 11: Metering equipment*
- 268 IEC 62262:2002, *Degrees of protection provided by enclosures for electrical equipment*
269 *against external mechanical impacts (IK code)*

270 **3 Terms and definitions**

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

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

- 274 • IEC Electropedia: available at <http://www.electropedia.org>
- 275 • ISO online browsing platform: available at <http://www.iso.org/obp>

276 **3.1 General definitions**277 **3.1.1**
278 **energy data**279 quantities related to the management of energy measured in industrial, commercial and similar
280 plants, including energy consumption, relevant variables and electrical parameters281 Note 1 to entry: Energy consumption refers to the various forms of energy (electricity, fossil fuels, steam, heat,
282 compressed air, etc.).

283 Note 2 to entry: Electrical parameters refer to P, U, I, PF, THD, harmonics, etc., which can also be monitored.

284 **3.1.2**
285 **energy performance**

286 measurable result(s) related to energy efficiency , energy use and energy consumption

287 Note 1 to entry: Energy performance can be measured against the organization's objectives , *energy targets* and
288 other energy performance requirements.

289 Note 2 to entry: Energy performance is one component of the performance of the energy management system

290 [SOURCE: ISO 50001:2018, 3.4.3]

291 **3.1.3**
292 **energy performance indicator**
293 **EnPI**

294 measure or unit of energy performance , as defined by the organization

295 Note 1 to entry: EnPI(s) can be expressed by using a simple metric, ratio, or a model, depending on the nature of
296 the activities being measured.

297 Note 2 to entry: See ISO 50006 for additional information on EnPI(s).

298 [SOURCE: ISO 50001:2018: 3.4.4]

299 [https://standards.iteh.ai/catalog/standards/sist/a4501110-6e7d-4040-ab0a-
562ffe4a3a/osist-pren-iec-62974-1-2023](https://standards.iteh.ai/catalog/standards/sist/a4501110-6e7d-4040-ab0a-562ffe4a3a/osist-pren-iec-62974-1-2023)300 **3.1.4**
301 **relevant variable**

302 quantifiable factor that significantly impacts energy performance and routinely changes

303 Note 1 to entry: Significance criteria are determined by the organization

304 EXAMPLE Weather conditions, operating conditions (indoor temperature, light level), working hours, production
305 output.

306 [SOURCE: ISO 50001:2018, 3.4.9]

307 **3.1.5**
308 **energy baseline**
309 **EnB**

310 quantitative reference(s) providing a basis for comparison of energy performance

311 Note 1 to entry: An energy baseline is based on data from a specified period of time and/or conditions, as defined by
312 the organization.313 Note 2 to entry: One or more energy baselines are used for determination of energy performance improvement, as a
314 reference before and after, or with and without implementation of energy performance improvement actions.

315 Note 3 to entry: See ISO 50015 for additional information on measurement and verification of energy performance.

316 Note 4 to entry: See ISO 50006 for additional information on EnPIs and EnBs.

317 [SOURCE: ISO 50001:2018, 3.4.7]