SLOVENSKI STANDARD
SIST FprEN IEC 61557-12:2018/oprA1:2020

01-november-2020

Električna varnost v nizkonapetostnih razdelilnih sistemih izmenične napetosti do 1 kV in enosmerne napetosti do 1,5 kV - Oprema za preskušanje, merjenje ali nadzorovanje zaščitnih ukrepov - 12. del: Naprave za merjenje in nadzorovanje moči (PMD)

Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Equipment for testing, measuring or monitoring of protective measures - Part 12: Power metering and monitoring devices (PMD)

Sécurité électrique dans les réseaux de distribution basse tension jusqu'à 1 000 V c.a. et 1 500 V c.c. - Dispositifs de contrôle, de mesure ou de surveillance de mesures de protection - Partie 12: Dispositifs de comptage et de surveillance du réseau électrique (PMD)

Ta slovenski standard je istoveten z: **FprEN IEC 61557-12:2018/prA1:2020**

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
29.080.01	Električna izolacija na splošno	Electrical insulation in general
29.240.01	Omrežja za prenos in distribucijo električne energije na splošno	Power transmission and distribution networks in general

SIST FprEN IEC 61557-12:2018/oprA1:2020 **en,fr,de**

85/726/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 61557-12/AMD1 ED2	
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2020-08-28	**2020-11-20**
SUPERSEDES DOCUMENTS:	
85/717/CD, 85/723/CC	

IEC TC 85 : MEASURING EQUIPMENT FOR ELECTRICAL AND ELECTROMAGNETIC QUANTITIES

SECRETARIAT:	SECRETARY:
China	Ms Guiju HAN
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD:
SC 22G,SC 22H,SC 23E,SC 65B,TC 82,TC 95,SC 121A	☐
	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 ☐ NOT 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.

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:

Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC - Equipment for testing, measuring or monitoring of protective measures - Part 12: Power metering and monitoring devices (PMD)

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTRICAL SAFETY IN LOW VOLTAGE DISTRIBUTION SYSTEMS UP TO 1 000 V AC AND 1 500 V DC – EQUIPMENT FOR TESTING, MEASURING OR MONITORING OF PROTECTIVE MEASURES –

Part 12: Power metering and monitoring devices (PMD)

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International Standard IEC 61557-12 has been prepared by IEC technical committee 85: Measuring equipment for electrical and electromagnetic quantities.

This amendment completes the second edition published in 2018. This edition constitutes a technical revision.

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

a) Introduction of requirements for products embedding measurement functions.

b) Introduction, for information, of potential new requirements coming from IEC 62053-2x set of standards

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

FDIS	Report on voting

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

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

A list of all parts in the IEC 61557 series, published under the general title *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC – Equipment for testing, measuring or monitoring of protective measures*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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ELECTRICAL SAFETY IN LOW VOLTAGE DISTRIBUTION SYSTEMS UP TO 1 000 V AC AND 1 500 V DC – EQUIPMENT FOR TESTING, MEASURING OR MONITORING OF PROTECTIVE MEASURES –

Part 12: Power metering and monitoring devices (PMD)

1 Scope

Replace by the following:

This part of IEC 61557 specifies requirements for power metering and monitoring devices (PMD) that measure and monitor the electrical quantities within electrical distribution systems, and optionally other external signals. These requirements also define the performance of PMD in single- and three-phase AC or DC systems having rated voltages up to 1 000 V AC or up to 1 500 V DC.

These devices are fixed or portable. They are intended to be used indoors and/or outdoors.

Power metering and monitoring devices (PMD), as defined in this document, give additional safety information, which aids the verification of the installation and enhances the performance of the distribution systems.

Additionally, this document specifies requirements for measurement functions dedicated to metering and monitoring of electrical parameters called power metering and monitoring function (PMF) which can be embedded in equipment (EPMF) that is not classified as PMD and for which the main function is not power metering and monitoring.

Requirements for power metering and monitoring function (PMF) and additional requirements for equipment embedding power metering and monitoring function (EPMF) are described in Annex H.

The power metering and monitoring devices (PMD) for electrical parameters described in this document are used for general industrial and commercial applications.

This document does not address functional safety and cyber security aspects.

This document is not applicable to:

– electricity metering equipment that complies with IEC 62053-21, IEC 62053-22, IEC 62053-23and IEC 62053-24. Nevertheless, uncertainties defined in this document for active and reactive energy measurement are derived from those defined in IEC 62053 (all parts);
– the measurement and monitoring of electrical parameters defined in IEC 61557-2 to IEC 61557-9 and IEC 61557-13 or in IEC 62020;
– power quality instrument (PQI) according IEC 62586 (all parts);
– devices covered by IEC 60051 (all parts) (direct acting analogue electrical measuring instrument).

NOTE 1 Generally such types of devices are used in the following applications or for the following general needs:

– energy management inside the installation, such as facilitating the implementation of documents such as ISO 50001 and IEC 60364-8-1;
– monitoring and/or measurement of electrical parameters;
– measurement and/or monitoring of the quality of energy inside commercial/industrial installations.

NOTE 2 A measuring and monitoring device of electrical parameters usually consists of several functional modules. All or some of the functional modules are combined in one device. Examples of functional modules are:

– measurement and monitoring of several electrical parameters simultaneously;
– energy measurement and/or monitoring, as well as sometimes compliance with aspects of building regulations;
– alarms functions;
– demand side quality (current and voltage harmonics, over/under voltages, voltage dips and swells, etc.).

NOTE 3 PMD are historically called power meter, power monitor, power monitor device, power energy monitoring device, power analyser, multifunction meter, measuring multifunction equipment, energy meters.

NOTE 4 Metering, measuring and monitoring applications are explained in Annex A.

3 Terms, definitions and notations

Add the following definitions:

3.1.1
Power metering and monitoring function
PMF
measurement function dedicated to metering and monitoring electrical parameters within electrical distribution systems embedded in an equipment that is not a PMD and complies to another IEC product standard.

3.1.2
Equipment embedding PMF
EPMF
equipment or arrangement of equipment embedding PMF whose main function is not metering and monitoring of electrical parameters.

Note to entry: Such equipment are uninterruptible power systems (UPS), static transfer systems (STS), circuit breakers, transfer switching equipment (TSE), switches, disconnectors, switch-disconnectors, fuse-combination units, programmable controllers (PLC), inverter for use in photovoltaic power systems, adjustable speed electrical power drive systems, protection relay, residual current devices (RCDs, RCBOs), residual current monitoring devices (RCM).

Add the following new annex H:

Annex H
(normative)

Requirements for Power metering and monitoring function (PMF) and additional requirements for equipment embedding power metering and monitoring function (EPMF)

H.1 Scope

This annex specifies additional requirements and tests for equipment embedding a power metering and monitoring function (EPMF) whose main function is not measurement and its embedded power metering and monitoring function (PMF).

When not otherwise stated in this annex, the core of this document should be applied to EPMF or PMF as appropriate when reading “PMD” in the core document.

NOTE The annex follows the same structure as the core document.

H.2 Normative references

Clause 2 applies.

In addition, the following standards apply:

IEC 62040, *Uninterruptible power systems (UPS) – All parts*

IEC 62310 series, *Static transfer systems (STS) – All parts*

IEC 60898, *Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations – All parts*

IEC 60947-2, *Low-voltage switchgear and controlgear - Part 2: Circuit-breakers*

IEC 60947-3, *Low-voltage switchgear and controlgear - Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*

IEC 60947-6-1, *Low-voltage switchgear and controlgear - Part 6-1: Multiple function equipment - Transfer switching equipment*

IEC 61131, *Programmable controllers – All parts*

IEC 62109-2, *Safety of power converters for use in photovoltaic power systems - Part 2: Particular requirements for inverters*

IEC 61800, Adjust*able speed electrical power drive systems – All parts*

IEC 60255, *Measuring relays and protection equipment – All parts*

IEC 61008, *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – All parts*

IEC 61009, *Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) – All parts*

IEC 62423, *Type F and type B residual current operated circuit-breakers with and without integral overcurrent protection for household and similar uses*

IEC 60755, *General safety requirements for residual current operated protective devices* IEC 62020, *Electrical accessories - Residual current monitors for household and similar uses (RCMs)*

H.3 Terms, definitions and notations

Clause 3 applies.

H.4 Requirements for PMF and additional requirements for EPMF

H.4.1 General requirements

The EPMF shall be chosen in the equipment list defined in Table H.1.

Table H.1 – Equipment list

Equipment	IEC Standard
Uninterruptible power systems (UPS)	IEC 62040 series
Static transfer systems (STS)	IEC 62310 series
Circuit-breakers	IEC 60947-2, IEC 60898 series
Transfer switching equipment (TSE)	IEC 60947-6-1
Switches, disconnectors, switch-disconnectors and fuse-combination units	IEC 60947-3
Programmable controllers (PLC)	IEC 61131 series
Inverter for use in photovoltaic power systems	IEC 62109-2
Adjustable speed electrical power drive systems	IEC 61800
Protection relay	IEC 60255
Residual current devices (RCD, RCBO)	IEC 61008 series, IEC 61009 series, IEC 62423, IEC 60947-2, IEC 60755 series
Residual current monitoring devices (RCM)	IEC 62020

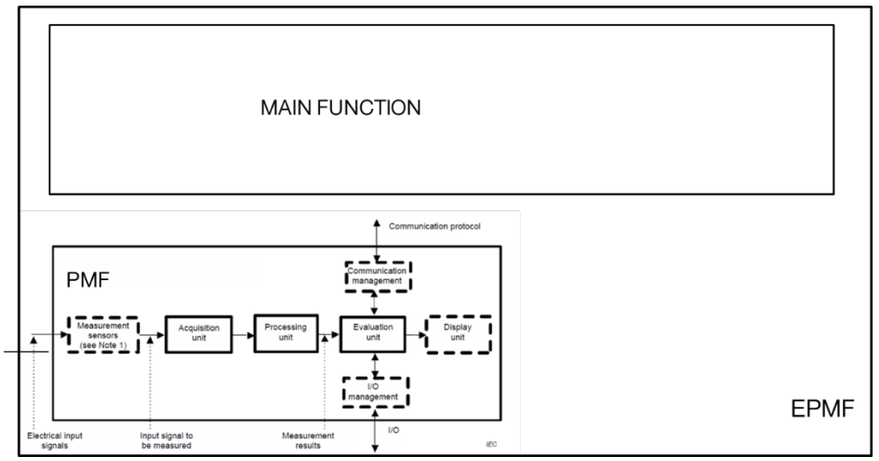
The requirements of 4.2 to 4.12 apply with the modifications specified in this annex.

H.4.2 EPMF general architecture

This subclause provides information about a possible implementation of a PMF in an EMPF.

Figure H.1 shows the common organization of an EPMF including its main function and PMF.

Organization of the measurement chain of EPMF: the electrical quantity can be measured either directly or via voltage and/or current sensors (see also H.4.4).



NOTE 1 It is not necessary that the parts in the dotted lines be included in PMF.

NOTE 2 I/O are analog and/or digital signals with alarms.

NOTE 3 Communications may be ensured by the EPMF or by the PMF part.

Figure H.1 – Example of architecture of EPMF

H.4.3 Classification of PMF

4.3 applies to PMF classified according to Table H.2.