SLOVENSKI STANDARD
SIST EN IEC 60255-181:2020

01-maj-2020

Merilni releji in zaščitna oprema - 181. del: Funkcijske zahteve za frekvenčno zaščito

Measuring relays and protection equipment - Part 181: Functional requirements for frequency protection

Ta slovenski standard je istoveten z: EN IEC 60255-181:2019

ICS:

29.120.70 Releji Relays

SIST EN IEC 60255-181:2020 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60255-181

April 2019

ICS 29.120.70

English Version

Measuring relays and protection equipment - Part 181: Functional requirements for frequency protection (IEC 60255-181:2019)

Relais de mesure et dispositifs de protection - Partie 181: Exigences fonctionnelles relatives aux protections de fréquence (IEC 60255-181:2019)

Messrelais und Schutzeinrichtungen - Teil 181: Funktionsanforderungen für den Frequenzschutz (IEC 60255-181:2019)

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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

Ref. No. EN IEC 60255-181:2019 E

European foreword

The text of document 95/402/FDIS, future edition 1 of IEC 60255-181, prepared by IEC/TC 95 "Measuring relays and protection equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60255-181:2019.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-01-03
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-04-03

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.

Endorsement notice

The text of the International Standard IEC 60255-181:2019 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 standards indicated:

IEC 60255-24	NOTE	Harmonized as EN 60255-24
IEC 61000-2-4:2002	NOTE	Harmonized as EN 61000-2-4:2002 (not modified)
IEC 61850-7-4	NOTE	Harmonized as EN 61850-7-4
IEC 61850-9-2	NOTE	Harmonized as EN 61850-9-2
IEC 61869-9:2016	NOTE	Harmonized as EN 61869-9:—[1] (not modified)

[1] Under preparation. Stage at time of publication: FprEN 61869-9:2016.

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.

Publication	Year	Title	EN/HD	Year
IEC 60050-103	-	International Electrotechnical Vocabulary - Part 103: Mathematics - Functions	-	-
IEC 60050-447	-	International Electrotechnical Vocabulary - Part 447: Measuring relays	-	-
IEC 60050-601	-	International Electrotechnical Vocabulary. Chapter 601: Generation, transmission and distribution of electricity - General	-	-
IEC 60255-1	-	Measuring relays and protection equipment - Part 1: Common requirements	EN 60255-1	-
IEC 61850	series	Communication networks and systems for power utility automation	EN 61850	series
IEC 61869	series	Instrument transformers	EN 61869	series

IEC 60255-181

Edition 1.0 2019-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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ICS 29.120.70 ISBN 978-2-8322-6496-6

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FOREWORD

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International Standard IEC 60255-181 has been prepared by IEC technical committee 95: Measuring relays and protection equipment.

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

FDIS	Report on voting
95/402/FDIS	95/409/RVD

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 60255 series, published under the general title *Measuring relays and protection equipment*, 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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

MEASURING RELAYS AND PROTECTION EQUIPMENT –

Part 181: Functional requirements for frequency protection

1 Scope

This part of IEC 60255 specifies the minimum requirements for functional and performance evaluation of frequency protection. This document also defines how to document and publish performance test results.

This document covers the functions based on frequency measurement or rate of change of frequency measurements. This document also covers frequency protection where additional blocking elements are used.

This document defines the influencing factors that affect the accuracy under steady state conditions and performance characteristics during dynamic conditions. The test methodologies for verifying performance characteristics and accuracy are also included in this document.

The frequency functions covered by this document are shown in Table 1:

Table 1 – Frequency protection designation

	IEEE/ANSI C37.2 function numbers	IEC 61850-7-4 logical nodes
Underfrequency protection	81U	PTUF
Overfrequency protection	81O	PTOF
Rate of change of frequency protection (ROCOF)	81R	PFRC

This functional document is applicable to frequency functions embedded in a protection relay but also to other physical devices which include frequency protection in their functionality (for example, trip units in a low-voltage circuit breaker or inverters associated with photovoltaic or storage systems).

This document does not cover synchronizing or synchronism-check functions.

This document does not specify the functional description of additional features often associated with frequency functions such as undervoltage blocking, df/dt or $\Delta f/\Delta t$ supervision, current supervision or power supervision (f/P function). Only their influence on the frequency protection function is covered in this document.

Frequency and rate of change of frequency measurement outputs provided by protection devices are not in the scope of this document.

Additionally, this document does not explicitly cover the frequency relays based on current as the input energizing quantity but the principles covered by this document can be extended to provide guidance for these applications.

The general requirements for measuring relays and protection equipment are defined in IEC 60255-1.

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 60255-1, *Measuring relays and protection equipment – Part 1: Common requirements*

IEC 60050-103, *International Electrotechnical Vocabulary – Part 103: Mathematics – Functions*

IEC 60050-447, *International Electrotechnical Vocabulary – Part 447: Measuring relays*

IEC 60050-601, *International Electrotechnical Vocabulary – Chapter 601: Generation, transmission and distribution of electricity – General*

IEC 61850 (all parts), *Communication networks and systems for power utility automation*

IEC 61869 (all parts), *Instrument transformers*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-103, IEC 60050-447, IEC 60050-601, and the following 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
input energizing quantity
energizing quantity which either by itself constitutes the characteristic quantity or helps to constitute it

Note 1 to entry: For the frequency protection function, the input characteristic quantity could be voltage.

[SOURCE: IEC 60050-447:2010, 447-03-02, modified – The note to entry has been replaced by a new note.]

3.2
characteristic quantity
electric quantity, or one of its parameters, the name of which characterizes a measuring relay or protection equipment and the values of which are the subject of accuracy requirements

Note 1 to entry: For underfrequency protection and overfrequency protection, the characteristic quantity is frequency; for rate of change of frequency protection (ROCOF), the characteristic quantity is rate of change of frequency.

[SOURCE: IEC 60050-447:2010, 447-07-01, modified – The examples have been replaced by a new note to entry.]