

AS/NZS 60255.181:2025



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# Measuring relays and protection equipment

Part 181: Functional requirements for frequency protection (IEC 60255-181:2019 (ED. 1.0) MOD)



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AS/NZS 60255.181:2025

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee EL-042, Renewable Energy Power Supply Systems & Equipment. It was approved on behalf of Standards Australia's Standards Development and Accreditation Committee on 16 January 2025 and by the New Zealand Standards Approval Board on 11 December 2024.

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**Part 181: Functional requirements for frequency protection (IEC 60255-181:2019 (ED. 1.0) MOD)**

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## Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-042, Renewable Energy Power Supply Systems and Equipment.

The objective of this document is to specify the minimum requirements for functional and performance evaluation of frequency protection. This document also defines how to document and publish performance test results.

The general requirements for measuring relays and protection equipment are defined in AS/NZS 60255.1.

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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.

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# Australian/New Zealand Standard

## Measuring relays and protection equipment

### Part 181: Functional requirements for frequency protection (IEC 60255-181:2019 (ED. 1.0) MOD)

#### 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.