

INTERNATIONAL STANDARD

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**Measuring relays and protection equipment –
Part 121: Functional requirements for distance protection**

**Relais de mesure et dispositifs de protection –
Partie 121: Exigences fonctionnelles pour protection de distance**



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**Measuring relays and protection equipment –
Part 121: Functional requirements for distance protection**

**Relais de mesure et dispositifs de protection –
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| FDIS | Report on voting |
| 95/319/FDIS | 95/321/RVD |

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

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

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MEASURING RELAYS AND PROTECTION EQUIPMENT –

Part 121: Functional requirements for distance protection

1 Scope

This part of IEC 60255 specifies minimum requirements for functional and performance evaluation of distance protection function typically used in, but not limited to, line applications for effectively earthed, three-phase power systems. This standard also defines how to document and publish performance tests.

This standard covers distance protection function whose operating characteristic can be defined on an impedance plane and includes specification of the protection function, measurement characteristics, phase selection, directionality, starting and time delay characteristics.

The test methodologies for verifying performance characteristics and accuracy are included in this standard. The standard defines the influencing factors that affect the accuracy under steady state conditions and performance characteristics during dynamic conditions. It also includes the instrument transformer requirements for the protection function.

The distance protection functions covered by this standard are as follows:

| | IEEE/ANSI C37.2 Function numbers | IEC 61850-7-4 Logical nodes |
|------------------------------------|-------------------------------------|--------------------------------|
| Phase distance protection | 21 | PDIS |
| Earth (ground) distance protection | 21G | PDIS |

This standard does not specify the functional description of additional features often associated with digital distance relays such as power swing blocking (PSB), out of step tripping (OST), voltage transformer (VT) supervision, switch onto fault (SOTF), trip on reclose (TOR), the logic for cross country faults in not effectively earthed networks, and trip conversion logic. Only their influence on the distance protection function is covered in this standard. The protection of series-compensated lines is beyond the scope of this standard.

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

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050 (all parts), *International Electrotechnical Vocabulary* (available at <<http://www.electropedia.org>>)

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

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