

INTERNATIONAL STANDARD

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Third edition
2000-12

High-voltage test techniques – Partial discharge measurements

*This **English-language** version is derived from the original **bilingual** publication by leaving out all French-language pages. Missing page numbers correspond to the French-language pages.*



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CONTENTS

	Page
FOREWORD	9
Clause	
1 Scope	13
2 Normative references	15
3 Definitions	15
4 Test circuits and measuring systems	25
4.1 General requirements.....	25
4.2 Test circuits for alternating voltages	25
4.3 Measuring systems for apparent charge	27
4.3.1 General.....	27
4.3.2 Coupling device.....	27
4.3.3 Pulse train response of instruments for the measurement of apparent charge	27
4.3.4 Wide-band PD instruments.....	29
4.3.5 Wide-band PD instruments with active integrator	31
4.3.6 Narrow-band PD instruments.....	31
4.4 Requirements for measurements with digital PD-instruments.....	31
4.4.1 Requirements for measurement of apparent charge q	33
4.4.2 Requirements for measurement of test voltage magnitude and phase	33
4.5 Measuring systems for derived quantities	33
4.5.1 Coupling device.....	33
4.5.2 Instruments for the measurement of pulse repetition rate n	33
4.5.3 Instruments for the measurement of average discharge current I	35
4.5.4 Instruments for the measurement of discharge power P	35
4.5.5 Instruments for the measurement of quadratic rate D	35
4.5.6 Instruments for the measurement of the radio disturbance voltage	35
4.6 Ultra-wide-band instruments for PD detection	37
5 Calibration of a measuring system in the complete test circuit.....	37
5.1 General.....	37
5.2 Calibration procedure	37
6 Calibrators	39
6.1 General.....	39
6.2 Calibrators for the calibration of a measuring system in the complete test circuit....	39
6.3 Calibrators for performance tests on measuring systems	41

Clause	Page
7	Maintaining the characteristics of calibrators and measuring systems 41
7.1	Schedule of tests 41
7.2	Maintaining the characteristics of calibrators 43
7.2.1	Type tests on calibrators 43
7.2.2	Routine tests on calibrators 43
7.2.3	Performance tests on calibrators 43
7.2.4	Performance checks on calibrators 43
7.2.5	Record of performance 45
7.3	Maintaining the characteristics of measuring systems 45
7.3.1	Type tests on PD measuring systems 45
7.3.2	Routine tests on measuring systems 47
7.3.3	Performance tests on measuring systems 47
7.3.4	Performance checks for measuring systems 47
7.3.5	Checks for additional capabilities of digital measuring systems 49
7.3.6	Record of performance 51
8	Tests 51
8.1	General requirements 51
8.2	Conditioning of the test object 51
8.3	Choice of test procedure 53
8.3.1	Determination of the partial discharge inception and extinction voltages 53
8.3.2	Determination of the partial discharge magnitude at a specified test voltage 53
9	Measuring uncertainty and sensitivity 55
10	Disturbances 55
11	Partial discharge measurements during tests with direct voltage 57
11.1	General 57
11.2	Quantities related to partial discharges 57
11.3	Voltages related to partial discharges 57
11.3.1	Partial discharge inception and extinction voltages 57
11.3.2	Partial discharge test voltage 59
11.4	Test circuits and measuring systems 59
11.5	Tests 59
11.5.1	Choice of test procedures 59
11.5.2	Disturbances 59
Annex A (normative)	Performance test on a calibrator 71
Annex B (informative)	Test circuits 77
Annex C (informative)	Measurements on cables, gas insulated switchgear, power capacitors and on test objects with windings 81
Annex D (informative)	The use of radio disturbance (interference) meters for the detection of partial discharges 83
Annex E (informative)	Guidelines to digital acquisition of partial discharge quantities 87
Annex F (informative)	Non-electrical methods of PD detection 93
Annex G (informative)	Disturbances 95

	Page
Figure 1 – Basic partial discharge test circuits.....	63
Figure 2 – Test circuit for measurement at a tapping of a bushing	65
Figure 3 – Test circuit for measuring self-excited test objects.....	65
Figure 4 – Connections for the calibration of the complete test arrangement	69
Figure 5 – Correct relationship between amplitude and frequency to minimize integration errors for a wide-band system.....	69
Figure A.1 – Calibration of pulse calibrators	75
Figure D.1 – Variation of CISPR radio disturbance meter reading $f(N)$ with repetition frequency N , for constant pulses	85
Figure E.1 – Output voltage signals U_{out} of two different PD measuring systems for apparent charge (double pulse)	91
Table 1 – Pulse train response of PD instruments	29
Table 2 – Tests required for calibrators.....	45
Table 3 – Tests required for measuring systems	49

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HIGH-VOLTAGE TEST TECHNIQUES – PARTIAL DISCHARGE MEASUREMENTS

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60270 has been prepared by IEC technical committee 42: High-voltage test techniques.

This third edition cancels and replaces the second edition published in 1981 of which it constitutes a technical revision.

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

FDIS	Report on voting
42/162/FDIS	42/165/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 3.

Annex A forms an integral part of this standard.

Annexes B, C, D, E, F and G are for information only.

Terms used throughout this standard which have been defined in clause 3: **bold roman type**.

The committee has decided that the contents of this publication will remain unchanged until 2008. At this date, the publication will be

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

The contents of the corrigendum of October 2001 have been included in this copy.

HIGH-VOLTAGE TEST TECHNIQUES – PARTIAL DISCHARGE MEASUREMENTS

1 Scope

This International Standard is applicable to the measurement of **partial discharges** which occur in electrical apparatus, components or systems when tested with alternating voltages up to 400 Hz or with direct voltage.

This standard

- defines the terms used;
- defines the quantities to be measured;
- describes test and measuring circuits which may be used;
- defines analogue and digital measuring methods required for common applications;
- specifies methods for calibration and requirements of instruments used for calibration;
- gives guidance on test procedures;
- gives some assistance concerning the discrimination of **partial discharges** from external interference.

The provisions of this standard should be used in the drafting of specifications relating to **partial discharge** measurements for specific power apparatus. It deals with electrical measurements of impulsive (short-duration) **partial discharges**, but reference is also made to non-electrical methods primarily used for **partial discharge** location (see annex F).

Diagnosis of the behaviour of specific power apparatus can be aided by digital processing of **partial discharge** data (see annex E) and also by non-electrical methods that are primarily used for **partial discharge** location (see annex F).

This standard is primarily concerned with electrical measurements of **partial discharges** made during tests with alternating voltage, but specific problems which arise when tests are made with direct voltage are considered in clause 11.

The terminology, definitions, basic test circuits and procedures often also apply to tests with other frequencies, but special test procedures and measuring system characteristics, which are not considered in this standard, may be required.

Annex A provides normative requirements for performance tests on calibrators.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*.

IEC 60060-2, *High-voltage test techniques – Part 2: Measuring systems*

CISPR 16-1:1993, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1: Radio disturbance and immunity measuring apparatus*