



National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 60214:1999

ICS 29.180

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**ON-LOAD TAP-CHANGERS
(IEC 60214:1989, MODIFIED)**

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EUROPEAN STANDARD
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EN 60214

August 1997

ICS 29.120.40

Supersedes HD 367 S2:1992

Descriptors: Power transformer, on-load tap-changers, motor-drive mechanism, requirement, test, nameplate

English version

On-load tap-changers
(IEC 60214:1989, modified)

Changeurs de prises en charge
(CEI 60214:1989, modifiée)

Stufenschalter
(IEC 60214:1989, modifiziert)

This European Standard was approved by CENELEC on 1997-07-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of the International Standard IEC 60214:1989, prepared by IEC TC 14, Power transformers, together with common modifications prepared by the Technical Committee CENELEC TC 14, Power transformers, was approved by CENELEC as HD 367 S2 on 1992-03-24.

A draft amendment to HD 367 S1:1992 was submitted to the formal vote and was approved by CENELEC on 1997-03-11.

HD 367 S1 and its amendment were combined and submitted to the formal vote for conversion into a European Standard, which was approved by CENELEC as EN 60214 on 1997-07-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 1998-03-01

- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 1998-03-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes B and ZA are normative and annexes A and C are informative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60214:1989 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

5 Definitions relating to motor-drive mechanisms

Additional subclause:

5.13 *Protective device against running-through*

An electrical device stopping the motor-drive mechanism in case of a failure of the step-by-step control circuit which would cause a running-through of the motor-drive mechanism.

7 *Replace the title of the clause by:*

7 **Design, construction and safety**

Replace the title of subclause 7.3 and the text of the main subclause by:

7.3 *Safety requirements for protection devices against increase of pressure*

In order to minimize the risk of fire or explosion resulting from an internal failure within the diverter switch or selector switch compartments one or more of the following devices shall be fitted.

NOTE: The tap selector compartments of air environment tap-changers are usually piped to the main transformer buchholz relay. Consideration should also be given to fitting a separate buchholz relay between the tap-selector compartment and the main transformer relay.

7.3.3 *Add:*

Where a pressure relief device is the sole protection, it shall also be arranged with contacts to enable the transformer to be tripped

NOTE: If a pressure relief device is fitted, the use of a self-sealing diaphragm type is possible. Consideration should also be given to fitting an outlet from the pressure relief device to protect personnel from the displaced oil. The use of such devices shall be subject to agreement between the manufacturer and purchaser.

8 Type tests

8.2.1 Add at the end of the subclause:

During service duty test shall be verified the switching chamber tightness by means of gas-in-oil analysis.

The diverter switch unit and its housing has to be placed in a container with a volume not exceeding 10 times that of the switching chamber, filled with clean and new transformer oil.

From this container oil samples have to be taken at the beginning and at the end of the service duty test operations. The comparison of the results of gas-in-oil analysis, performed on the above mentioned oil samples, shall not show a total increase greater than 10 ppm of the gases usually developed during arcing phenomena, namely H₂, CH₄, C₂H₄, C₂H₂, C₂H₆.

8.3 Add after the first paragraph:

NOTE: In special cases, if necessary, longer durations up to 5 s may be specified.

8.6.4 Add at the end of the subclause:

NOTE: In certain applications with very special system conditions the specification of other combinations of withstand voltages may be justified. In such cases general guidance shall be obtained from IEC 71-1.

10 Replace the title of the clause by:

10 Nameplate and manufacturer's handbook

Add:

The manufacturer shall provide a handbook to facilitate the safe and proper operation of the tap-changer including maintenance criteria.

The handbook shall cover but not be limited to installation, operation, maintenance criteria and in addition identify any inherent dangers or risks (e.g. electric shock, stored energy devices, unexpected starting of the mechanism following interruption of supply, etc.).

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