

**Electric power engineering - Modal components in  
three-phase AC systems - Quantities and  
transformations**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 62428:2008 sisaldab Euroopa standardi EN 62428:2008 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 24.11.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

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Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 62428:2008 consists of the English text of the European standard EN 62428:2008.

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**Electric power engineering -  
Modal components in three-phase a.c. systems -  
Quantities and transformations  
(IEC 62428:2008)**

Energie électrique -  
Composantes modales  
dans les systèmes a.c. triphasés -  
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in Drehstromsystemen -  
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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
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## Foreword

The text of document 25/382/FDIS, future edition 1 of IEC 62428, prepared by IEC TC 25, Quantities and units, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62428 on 2008-08-01.

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) 2009-05-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2011-08-01

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 62428:2008 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 60909-0	NOTE Harmonized as EN 60909-0:2001 (not modified).
IEC 61660	NOTE Harmonized in EN 61660 series (not modified).

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## **Annex ZA** (normative)

### **Normative references to international publications with their corresponding European publications**

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-141	- <sup>1)</sup>	International Electrotechnical Vocabulary (IEV) - Part 141: Polyphase systems and circuits	-	-

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<sup>1)</sup> Undated reference.

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# ELECTRIC POWER ENGINEERING – MODAL COMPONENTS IN THREE-PHASE AC SYSTEMS – QUANTITIES AND TRANSFORMATIONS

## 1 Scope

This International Standard deals with transformations from original quantities into modal quantities for the widely used three-phase a.c. systems in the field of electric power engineering.

The examination of operating conditions and transient phenomena in three-phase a.c. systems becomes more difficult by the resistive, inductive or capacitive coupling between the phase elements and line conductors. Calculation and description of these phenomena in three-phase a.c. systems are easier if the quantities of the coupled phase elements and line conductors are transformed into modal quantities. The calculation becomes very easy if the transformation leads to decoupled modal systems. The original impedance and admittance matrices are transformed to modal impedance and admittance matrices. In the case of decoupling of the modal quantities, the modal impedance and admittance matrices become diagonal matrices.

## 2 Normative references

The following referenced documents are indispensable for the application 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 60050-141, *International Electrotechnical Vocabulary (IEV) – Part 141: Polyphase systems and circuits*

## 3 Terms, definitions, quantities and concepts

### 3.1 General

Quantities in this standard are usually time-dependent. These quantities are for instance electric currents, voltages, linked fluxes, current linkages, electric and magnetic fluxes.

For quantities the general letter symbol  $g$  in case of real instantaneous values,  $\underline{g}$  in case of complex instantaneous values and  $\underline{\underline{G}}$  in case of phasors (complex r.m.s. values) are used.

NOTE Complex quantities in this standard are underlined. Conjugated complex quantities are indicated by an additional asterisk (\*). Matrices and column vectors are printed in bold face type, italic.

### 3.2 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-141 and the following apply.

#### 3.2.1

##### **original quantities**

quantities  $g$  or  $\underline{\underline{G}}$  of a three-phase a.c. system

NOTE Subscripts 1, 2, 3 are generally used in this standard; additional letters may be put, for instance L1, L2, L3 as established in IEC 60909, IEC 60865 and IEC 61660.