TECHNICAL REPORT

IEC TR 60909-1

Second edition
2002-07

Short-circuit currents in three-phase a.c. systems –

Part 1: Factors for the calculation of short-circuit currents according to IEC 60909-0

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SHORT-CIRCUIT CURRENTS IN THREE-PHASE AC SYSTEMS –

Part 1: Factors for the calculation of short-circuit currents according to IEC 60909-0

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FOREWORD

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Technical reports do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful by the maintenance team.

IEC 60909-1, which is a technical report, has been prepared by IEC technical committee 73: Short-circuit currents.

This technical report shall be read in conjunction with IEC 60909-0.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
73/120/DTR	73/125/RVC

Full information on the voting for the approval of this technical report 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.

This document, which is purely informative, is not to be regarded as an International Standard.

The committee has decided that the contents of this publication will remain unchanged until 2010. At this date, the publication will be

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- withdrawn;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

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SHORT-CIRCUIT CURRENTS IN THREE-PHASE AC SYSTEMS –

Part 1: Factors for the calculation of short-circuit currents according to IEC 60909-0

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1 General

1.1 Scope and object

This part of IEC 60909 is a technical report applicable to short-circuit currents in three-phase a.c. systems. This technical report aims at showing the origin and the application, as far as necessary, of the factors used to meet the demands of technical precision and simplicity when calculating short-circuit currents according to IEC 60909-0.

Thus this technical report is an addition to IEC 60909-0. It does not, however, change the basis for the standardized calculation procedure given in IEC 60909-0.

NOTE References are given in some cases to offer additional help, not to change the procedure laid down in the standard.

1.2 Reference documents

IEC 60038:1983, *IEC standard voltages*

IEC 60909-0:2001, *Short-circuit currents in three-phase a.c. systems – Part 0: Calculation of currents*

IEC/TR 60909-2:1992, *Electrical equipment – Data for short-circuit current calculations in accordance to IEC 60909 (1988)*

IEC/TR 60909-4:2000, *Short-circuit currents in three-phase a.c. systems – Part 4: Examples for the calculation of short-circuit currents*

1.3 Application of the factors

1.3.1 Factor c

The voltage factors $c_{\max}$ and $c_{\min}$ are used together with the equivalent voltage source at the short-circuit location in order to calculate maximum and minimum initial short-circuit currents (see 2.1).

1.3.2 Factors K_G and K_S or K_{SO}

The impedance correction factors K_G and K_S or K_{SO} are introduced when calculating the short-circuit impedances of generators and power station units (with or without on-load tap changer) (see 2.2).

1.3.3 Factors $K_{G,S}$, $K_{T,S}$ or $K_{G,SO}$, $K_{T,SO}$

The impedance correction factors $K_{G,S}$, $K_{T,S}$ or $K_{G,SO}$, $K_{T,SO}$ are introduced when calculating the partial short-circuit currents in case of a short circuit between generator and unit transformer (with or without on-load tap changer) of a power station unit (see 2.2.3.2 or 2.2.4.2).

1.3.4 Factor K_T

The impedance correction factor K_T is used when calculating the short-circuit impedances of network transformers (see 2.3).