

EC Directives, functional safety and the role of CENELEC standardization

ICS 01.120

National foreword

This Published Document reproduces: CENELEC Report R0BT-004:2001.
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Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

This Published Document, having been prepared under the direction of the Electrotechnical Sector Policy and Strategy Committee, was published under the authority of the Standards Policy and Strategy Committee on 02 February 2002

Summary of pages

This document comprises a front cover, an inside front cover, the CR title page, pages 2 to 13 and a back cover.

The BSI copyright date displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

© BSI 02 February 2002

ISBN 0 580 38953 7

English version

EC Directives, functional safety and the role of CENELEC standardization

This CENELEC Report has been prepared by the CENELEC BTWG 99-2, "Functional safety". It was approved for publication by the CENELEC Technical Board on 2000-04-01.

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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

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Ref. No. R0BT-004:2001 E

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Foreword

This CENELEC Report on functional safety has been prepared by CENELEC BTWG 99-2, Functional safety.

This report provides a definition of functional safety and considers the relationship between functional safety and CENELEC standards including those that have been harmonized under relevant EC directives e.g. the LVD, ATEX, MDD, MD, EMC.

The text of the draft was approved by the CENELEC Technical Board for final editing and publication on 2000-04-01.

Note that in Annex A the reference to Annex B and C have been removed.

1 Task

Arising from the background given in annex A, CENELEC BTWG 99-2 was asked to prepare a report on functional safety which addressed:-

- the definition of functional safety;
- the way in which functional safety is being handled, from a CENELEC standardization viewpoint, under various EC Directives but specifically those relevant for the electrotechnical field such as the LVD, ATEX, MDD, MD, EMC.;
- the implications of functional safety related to safety-related EMC-immunity within the scope of the Low Voltage Directive and other EC Directives from a CENELEC standardization viewpoint.

2 Functional safety

2.1 Definition of functional safety

Functional safety is, for the purpose of this Report, defined as:-

“Part of the overall safety relating to the equipment and its associated control system which depends on the correct functioning of electrical, electronic, programmable electronic (E/E/PE) safety-related systems, other technology safety related systems and external risk reduction facilities”.

This definition is based on IEC 61508-4 (see Annex B for an overview of IEC 61508).

2.2 What is functional safety?

The key to understanding functional safety is the concept of a safety-related system. The term ‘safety related’ is used to describe those systems (i.e. a safety-related system) which are required to perform a specific function or functions (i.e. safety functions) to reduce risks to a level which is considered tolerable.

The key to the understanding of safety-related systems is the concept that a safety-related system carries out safety functions and that a safety function should be specified both in terms of its functionality (what the function does) and its safety integrity (the probability of a safety function being performed satisfactorily).

Safety-related systems may be implemented in any technology, but in the context of CENELEC standardisation the primary concern are those which are implemented in E/E/PE technologies.

The following are examples of E/E/PE safety-related systems:

- an emergency shut-down system in a hazardous chemical process plant;
- a crane safe load indicator;
- a railway signalling system;