IEC 62061

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 2
AMENDEMENT 2

Safety of machinery – Functional safety of safety-related electrical, electronic and programmable electronic control systems

Sécurité des machines – Sécurité fonctionnelle des systèmes de commande électriques, électroniques et électroniques programmables relatifs à la sécurité

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FOREWORD

This amendment has been prepared by IEC technical committee 44: Safety of machinery – Electrotechnical aspects.

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

CDV	Report on voting
44/718/CDV	44/725/RVC

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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- withdrawn,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

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INTRODUCTION

In the fourth paragraph, replace ISO 12100-1 *with* ISO 12100:2010.

In the seventh paragraph, replace ISO 12100-1 *with* ISO 12100.

In the seventh paragraph, replace ISO 14121 (EN 1050) *with* ISO 12100.

Figure 1 – Relationship of IEC 62061 to other relevant standards

Replace, in the first box of this figure, ISO 12100, Safety of machinery – Basic concept, general principles for design

ISO 14121, Safety of machinery – Principles for risk assessement

with ISO 12100, Safety of machinery – General principles for design – Risk assessment and risk reduction

2 Normative references

Replace the reference to ISO 13849-2:2003 with the following new reference:

ISO 13849-2:2012, *Safety of machinery – Safety-related parts of control systems – Part 2: Validation*

Delete from the existing list, the following standard:

ISO 14121, *Safety of machinery – Principles of risk assessment*

3.2.1

Replace, in the new source as modified by Amendment 1, ISO 12100-1:2003 *with* ISO 12100:2010, 3.1.

3.2.5

Replace, in the new source as modified by Amendment 1, IEC 61508-4 *with* IEC 61508-4:2010, 3.2.7.

3.2.7

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.4.3 *with* IEC 61508-4:2010, 3.4.3.

3.2.9

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.1.12 *with* IEC 61508-4:2010, 3.1.12.

3.2.10

Replace, in the new source as modified by Amendment 1, ISO 12100, 3.6 *with* ISO 12100:2010, 3.6.

3.2.11

Replace, in the new source as modified by Amendment 1, ISO 12100, 3.10 *with* ISO 12100:2010, 3.10.

3.2.12

Replace, in the new source as modified by Amendment 1, ISO 12100, 3.19 *with* ISO 12100:2010, 3.19

3.2.13

Replace, in the new source as modified by Amendment 1, ISO 12100, 3.12 *with* ISO 12100:2010, 3.12.

3.2.15

Replace, in the new source as modified by Amendment 1, ISO 12100, 3.30 *with* ISO 12100:2010, 3.30.

3.2.19

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.5.4 *with* IEC 61508-4:2010, 3.5.4.

3.2.20

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.5.7 *with* IEC 61508-4:2010, 3.5.7

3.2.21

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.5.5 *with* IEC 61508-4:2010, 3.5.5.

3.2.22

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.5.6 *with* IEC 61508-4:2010, 3.5.6.

3.2.23

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.5.8 *with* IEC 61508-4:2010, 3.5.8.

3.2.27

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.5.16 *with* IEC 61508-4:2010, 3.5.16.

3.2.28

Add the following new Note 2:

NOTE 2   Within this standard λ is expressed as the constant failure rate with respect to 1 hour.

and renumber the existing note as "NOTE 1".

3.2.29

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.5.17 *with* IEC 61508-4:2010. 3.5.17.

3.2.30

Replace, in the existing source, IEC 61508-4, 3.6.1 *with* IEC 61508-4:2010, 3.6.1.

3.2.31

Replace, in the existing source, IEC 61508-4, 3.6.3 *with* IEC 61508-4:2010, 3.6.3.

3.2.35

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.3.4 *with* IEC 61508-4:2010, 3.3.4.

3.2.37

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.8.5 *with* IEC 61508-4:2010, 3.8.5.

3.2.38

Replace, in the new source as modified by Amendment 1, IEC 61508-4, 3.8.6 *with* IEC 61508-4:2010, 3.8.6.

3.2.39

Replace the existing source IEC 61508-4, 3.6.4 modified and ISO 12100-1:2003, 3.32 *with the following new source:*

IEC 61508-4:2010, 3.6.4 modified and ISO 12100:2010, 3.34.

3.2.43

Replace, in the existing source, IEC 61508-4, 3.6.10 *with* IEC 61508-4:2010, 3.6.10.

In the existing note, replace ISO 12100-1 *with* ISO 12100.

3.2.44

Replace, in the existing source, IEC 61508-4, 3.6.5 *with* IEC 61508-4:2010, 3.6.5.

3.2.45

Replace, in the existing source, IEC 61508-4, 3.6.6 *with* IEC 61508-4:2010, 3.6.6.

3.2.48

Replace, in the existing source, IEC 61511-1, 3.2.81.1.3 *with* IEC 61511-1:2003, 3.2.81.1.3.

3.2.49

Replace, in the existing source, IEC 61511-1, 3.2.81.1.2 *with* IEC 61511-1:2003, 3.2.81.1.2.

3.2.51

Replace, in the existing source, IEC 61508-4, 3.8.1 *with* IEC 61508-4:2010, 3.8.1.

Replace, in the existing source, IEC 61511-1, 3.2.92 *with* IEC 61511-1:2003, 3.2.92.

3.2.52

Replace, in the existing source, IEC 61508-4, 3.8.2 *with* IEC 61508-4:2010, 3.8.2.

5.2.1.1

Replace ISO 12100-1, ISO 12100-2, and ISO 14121 *with* ISO 12100.

5.2.1.4

In the note, replace IEC 61508-7 *with* IEC 61508-7:2010.

6.4.1.1

In item d) of this subclause, replace ISO 13849-2 *with* ISO 13849-2:2012.

In item e) of this subclause, replace ISO 13849-2 *with* ISO 13849-2:2012.

6.7.2.2

Replace, in the new Note 1 as modified by Amendment 1, IEC 60947-4-1 *with* IEC 60947-4-1:2009+A1:2012.

6.7.4.4.2

Replace, in the new note as modified by Amendment 1, IEC 60947-4-1 *with* IEC 60947-4-1:2009+A1:2012.

6.7.6.4

Replace the word PLC *with* PL = c.

6.7.7.2

Replace, in the new Note 3 added by Amendment 1, IEC 60947-4-1 *with* IEC 60947-4-1:2009+A1:2012.

Replace, in the new Note 5 added by Amendment 1, ISO 13849-2 *with* ISO 13849-2:2012.

6.7.7.3

In the note, replace 3.3 and D.5 of ISO 13849-2:2003 *with* 4.4 and D.2 of ISO 13849-2:2012.

6.7.8.1.2

In Note 2, replace IEC 61508-6 *with* IEC 61508-6:2010.

In Note 4 item a), replace IEC 61508-7 *with* IEC 61508-7:2010.

Replace, in the new Note 4 item b) as modified by Amendment 1, IEC 61508-7 *with* IEC 61508-7:2010.

Replace, in the new Note 4 item c) as modified by Amendment 1, IEC 61508-7 *with* IEC 61508-7:2010.

6.7.8.2.1   General

Insert, in Note 2 of this subclause, the following new second bullet:

Throughout this standard λ is expressed as the constant failure rate with respect to 1 hour.

Delete, in the second bullet of Note 3, "$\times$ 1h".

6.7.8.2.2   Basic subsystem architecture A: zero fault tolerance without a diagnostic function

Replace, below Formula (A), $PFH_{\text{DssA}} = \lambda_{\text{DssA}} \times 1h$ *with* $PFH_{\text{DssA}} = \lambda_{\text{DssA}}$.

6.7.8.2.3   Basic subsystem architecture B: single fault tolerance without a diagnostic function

Replace, below Formula (B), $PFH_{\text{DssB}} = \lambda_{\text{DssB}} \times 1h$ *with* $PFH_{\text{DssB}} = \lambda_{\text{DssB}}$.

6.7.8.2.4   Basic subsystem architecture C: zero fault tolerance with a diagnostic function

Replace, below Formula (C), $PFH_{\text{DssC}} = \lambda_{\text{DssC}} \times 1h$ *with* $PFH_{\text{DssC}} = \lambda_{\text{DssC}}$.

6.7.8.2.5   Basic subsystem architecture D: single fault tolerance with a diagnostic function(s)

Replace, below Formula (D.1), $PFH_{\text{DssD}} = \lambda_{\text{DssD}} \times 1h$ *with* $PFH_{\text{DssD}} = \lambda_{\text{DssD}}$.

Replace, below Formula (D.2), $PFH_{\text{DssD}} = \lambda_{\text{DssD}} \times 1h$ *with* $PFH_{\text{DssD}} = \lambda_{\text{DssD}}$.

6.7.9.1.1

Replace, in item d), ISO 13849-2 *with* ISO 13849-2:2012.

6.7.9.2.1

Replace, in Note 2, IEC 61508-7 *with* IEC 61508-7:2010.

6.7.9.2.2

Replace, in NOTE 2, ISO 13849-2 Clause D.3 *with* ISO 13849-2:2012, Table D.2.

6.10.2.7

Replace, in the Note, ISO/IEC 15910 *and* ISO/IEC 9254 *with* ISO/IEC/IEEE 26512:2011and ISO/IEC/IEEE 26511:2011

6.12.1.2

Replace, in the new Note 1 as modified by Amendment 1, IEC 61508-7 *with* IEC 61508-7:2010.

7.2   Documentation for installation, use and maintenance

Replace, in Note 1, Clause 6 of ISO 12100-2 *with* Clause 6.4 of ISO 12100:2010.

8.3.2

Replace, in Note 2, IEC 61508-7 *with* IEC 61508-7:2010.

Replace, in Note 4, IEC 61508-7 *with* IEC 61508-7:2010.

Replace, in Note 6, IEC 61508-7 *with* IEC 61508-7:2010.

A.2.4.1 Frequency and duration of exposure

Replace, in the third paragraph, the words "exposure ≤ 1 h, which should not be decreased at any time." *with the following:*

"exposure ≥ 1 per h, which should not be decreased in value at any time."

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