SLOVENSKI

PREDSTANDARD

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Low-voltage switchgear and controlgear -- Part 6-1: Multiple function equipment - Automatic transfer switching equipment

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COMMITTEE DRAFT FOR VOTE (CDV)
PROJET DE COMITÉ POUR VOTE (CDV)

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Titre du CE/SC: Appareillage à basse tension	TC/SC Title: Low-voltage switchgear and controlgear	
Secretary: Mr. Marcel DELAPLACE (France) Secrétaire: E-mail: marcel_delaplace@mail.schneider.fr		
Also of interest to the following committees Intéresse également les comités suivants	Supersedes documents Remplace les documents 17B/1289/CD and 17B/1300A/CC	
Functions concerned Fonctions concernées ☐ Safety / Sécurité ☐ EMC / CEM ☐ Environment / Environnement ☐ Quality assurance / Assurance qualité		

Titre : Amendement 3 à la CEI 60947-6-1, Ed.1: Appareillage à basse tension - Partie 6-1: Matériels à fonctions multiples - Matériels de connexion de transfert automatique

Title : Amendment 3 to IEC 60947-6-1, Ed.1: Low-voltage switchgear and controlgear - Part 6-1: Multiple function equipment - Automatic transfer switching equipment

Note d'introduction

Introductory note

ATTENTION	ATTENTION
CDV soumis en parallèle au vote (CEI) et à l'enquête (CENELEC)	**Parallel IEC CDV/CENELEC Enquiry**

FOREWORD

This amendment has been prepared by subcommittee 17B: Low-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear.

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

FDIS	Report on voting
17B/XXXX/FDIS	17B/XXXX/RVD

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 publication will remain unchanged until 2008. At this date, the publication will be

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- withdrawn;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

Title

Change the title to read:

Low-voltage switchgear and controlgear – Part 6-1: Multiple function equipment – Transfer switching equipment

***Change, in the whole document, except where it is explicitly specified,* "ATSE" *into* "TSE".**

Page 3 and amendment 2, page 3

CONTENTS

⇒ *Note to National Committees (for information, not part of the amendment): The contents will be updated in the FDIS.*

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PREFACE

Delete the list of IEC publications.

Page 9

1.1 Scope

Replace the first paragraph of this subclause by the following:

This standard applies to transfer switching equipment (TSE) to be used in power systems with interruption of the supply to the load during transfer, the rated voltage of which does not exceed 1 000 V a.c. or 1 500 V d.c.

It covers:

– manually operated transfer switching equipment (MTSE);
– remote operated transfer switching equipment (RTSE);
– automatic transfer switching equipment (ATSE).

It covers TSE provided with or without an enclosure.

Replace the last paragraph of this subclause by the following note:

NOTE TSE used only for emergency lighting may be subject to specific rules and/or legal requirements and are not, therefore, covered by this standard.

1.2 Object

Modify the item 1) to read:

1) The characteristics of the equipment:
   a) specific equipment;
   b) equipment the main part of which being devices covered by other IEC 60947 product standards.

Page 9 and amendment 2, page 3

Add, after 1.2, the following new subclause 1.3:

1.3 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 60112:2003, *Methods for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions*

IEC 60947-1:2004, *Low-voltage switchgear and controlgear – Part 1: General rules*

IEC 60947-2:2003, *Low-voltage switchgear and controlgear – Part 2: Circuit-breakers*

IEC 60947-3:1999, *Low-voltage switchgear and controlgear – Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*
Amendment 1 (2001)

IEC 60947-4-1:2000, *Low-voltage switchgear and controlgear – Part 4-1: Contactors and motor-starters – Electromechanical contactors and motor-starters*
Amendment 1 (2002)

IEC 60947-4-2:1999, *Low-voltage switchgear and controlgear – Part 4-2: Contactors and motor-starters – AC semiconductor motor controllers and starters*
Amendment 1 (2001)

IEC 60947-4-3:1999, *Low-voltage switchgear and controlgear – Part 4-3: Contactors and motor-starters – AC semiconductor controllers and contactors for non-motor loads*

IEC 60947-6-2:2002, *Low-voltage switchgear and controlgear – Part 6-2: Multiple function equipment – Control and protective switching devices (or equipment) (CPS)*

IEC 61000-4-2:1995, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*
Amendment 1 (1998)
Amendment 2 (2000)

IEC 61000-4-3:2002, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated radio-frequency electromagnetic field immunity test*
Amendment 1 (2002)

IEC 61000-4-4:1995, *Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*
Amendment 1 (2000)
Amendment 2 (2001)

IEC 61000-4-5:1995, *Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surface immunity test*
Amendment 1 (2000)

IEC 61000-4-6:2003, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

CISPR 11:2003, *Industrial, scientific and medical (ISM) radio-frequency equipment – Electromagnetic disturbance characteristics – Limits and methods of measurement*

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2 Definitions

Replace the existing title by the following:

2 Definitions, symbols and abbreviations

Insert, after the first paragraph the following alphabetical index of definitions:

Replace, on page 11, definitions 2.1.1 and 2.1.2 by the following new definitions 2.1.1 to 2.1.5:

2.1.1
transfer switching equipment (TSE)
equipment containing one or more switching devices for disconnecting load circuits from one supply and connecting to another supply

2.1.2
manually operated transfer switching equipment (MTSE)
transfer switching equipment operated manually

2.1.3
remotely operated transfer switching equipment (RTSE)
transfer switching equipment operated remotely

NOTE RTSE may have optional feature for local operation.

2.1.4
automatic transfer switching equipment (ATSE)
self-acting transfer switching equipment

NOTE 1 ATSE normally includes all necessary devices for monitoring and transferring operations.

NOTE 2 ATSE may have optional feature for manual operation.

2.1.5
derived TSE
TSE in which the main part are device(s) fulfilling requirements of other IEC 60947 product standards

NOTE For convenience, derived TSE may be called derived ATSE, derived MTSE or derived RTSE.

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2.2.1
operating sequence

Change the term "**operating sequence**" *into* "**operating sequence of ATSE**".

Keep "ATSE" *in the definition.*

2.2.2
monitored supply deviation

Change the term "**monitored supply deviation**" *into* "**monitored supply deviation of ATSE**".

Keep "ATSE" *in the definition.*

2.2.3.5
off-time

Replace the existing definition by the following new definition with the note:

time measured during transfer from the instant of final arc extinction, under the conditions producing the longest arcing time, in all poles to the closing of main contacts on another supply

NOTE Any purposely introduced time delay would be included within the off-time.

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Add, after definition 2.3.3, the following new subclause:

2.4 Symbols and abbreviations

EMC Electromagnetic compatibility

I_{cm} Rated short-circuit making capacity

I_{cn} Rated short-circuit breaking capacity

I_{cw} Rated short-time withstand current

I_e Rated operational current

I_u Rated uninterrupted current

SCPD Short-circuit protective device

U_e Rated operational voltage

U_i Rated insulation voltage

U_{imp} Rated impulse withstand voltage

U_r Power frequency or d.c. recovery voltage

U_s Rated control supply voltage

3 Classification

Replace the existing text of this clause by the following:

Transfer switching equipment is classified according to:

- their short-circuit capability:
  - class PC: TSE that is capable of making and withstanding, but is not intended for breaking short-circuit currents;

    NOTE Contactors can be used in class PC if they fulfil the test requirements of class PC.
  - class CB: TSE provided with over-current releases and the main contacts of which are capable of making and are intended for breaking short-circuit currents;
  - class CC: TSE that is capable of making and withstanding, but is not intended for breaking short-circuit currents. TSE based on devices fulfilling the requirements of IEC 60947-4-1;

    NOTE Additional requirements regarding short-circuit conditions for this class are under consideration.
- the method of controlling the transfer:
  - manually operated switching equipment (MTSE);
  - remote operated switching equipment (RTSE);
  - automatic transfer switching equipment (ATSE).

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4.1 Summary of characteristics

Delete the sixth dashed item: "– Switching overvoltages (subclause 4.9)*".*

Add, at the end of this subclause, the following new paragraph:

Where the TSE uses IEC 60947 products, the relevant characteristics from those standards may also be additionally used.

4.2 Type of equipment

Modify the first dashed item to read:

– class and transfer control method of the equipment (see Clause 3);

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4.3.6.4 Rated conditional short-circuit current

Modify the first paragraph to read:

"… protected by a specified short-circuit protective device (SCPD), can satisfactorily withstand …"

Page 21 and amendment 2, page 5

4.4 Utilization category

Replace the second paragraph by the following:

The designation of utilization categories is completed by the suffix A or B, according to the number of operations (see Tables VII, VIII and IX) required by the application.

Table I – Utilization categories

Replace column headings "Frequent operations" *and* "Infrequent operations" *by* "Operation A" *and* "Operation B" *respectively.*

Insert, after AC-31A, the following new utilization category AC-32A:

	AC-31A	…	…
	AC-32A	AC-32B	Switching of mixed resistive and inductive loads, including moderate overloads
	AC-33A	…	…

Add, after table I, the following new paragraph:

For TSE for which the main parts are covered by other IEC 60947 product standards, utilization categories defined in these product standards may be used as equivalent as those defined in Table 1, see Annex A.

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Delete completely subclauses 4.7 and 4.8.

4.9 Switching overvoltages

Delete completely this subclause.

Page 23 and amendment 2, page 5

5.1 Nature of information

Replace item d) by the following:

d) class of equipment: PC, CB or CC;

*Replace, in item h), "*Class PC*" by "*Class PC/CC*"*

Replace items j) and o) by the following:

j) rated conditional short circuit current and associated SCPD (see 4.3.6.4), where applicable;

o) rated impulse withstand voltage;

Add, after item r), the following new item s):

s) off-time for derived TSE (see 2.2.3.5).

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7.1 Constructional requirements

Replace the existing text, including the subclause 7.1.3, by the following:

Subclause 7.1 of IEC 60947-1 applies with the following additions.

7.1.1.1 Resistance to abnormal heat and fire

Parts of insulating materials necessary to retain current-carrying parts in position shall conform to the glow wire test of 8.2.1.1.1 at a test temperature of 850 °C.

When tests on materials are used, the required flammability category of IEC 60695-11-10 shall be given by the manufacturer for each material to be tested.

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7.2.1.1 Operating mechanism

Replace the existing text of item b) by the following:

b) The operating mechanism shall be interlocked to prevent simultaneous connection to both normal and alternative supplies under all conditions. Removal of doors or access panels shall not result in defeating the interlocking mechanism.

Modify, item c), the existing text of the first paragraph to read:

*"*For Class PC/CC TSE, the operating mechanism …*"*

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Table II – Verification of making and breaking capacity – Conditions for making and breaking corresponding to the utilization categories

Insert, after AC-31A AC-31B, the following new utilization category AC-32A AC-32B and modify the existing category AC-33A AC-33B as follows:

	AC-31A AC-31B	…	…	…	…	…	…
	AC-32A AC-32B	3,0	1,05	0,65	0,05	3)	3)
	AC-33A AC-33B	10	1,05	8)	0,05	3)	3)

Replace, in the heading of the fourth column, "U/U_e" *by* "U_r/U_e".

Replace, in the third column, for utilization categories AC-36A AC-36B and DC-36A DC-36B, "15 4)" *by* "1,5 4)".