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Low voltage switchgear and controlgear assemblies – Part 2: Particular
requirements for busbar trunking systems (busways)

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17D/302/CDV

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

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Secretary: Dipl. -Phys. Guido von Trentini (Germany) Secrétaire: E-mail: guido.trentini@t-online.de						
Also of interest to the following committees Intéresse également les comités suivants SC 17B		Supersedes documents Remplace les documents 17D/288/CD and 17D/293A/CC				
Functions concerned Fonctions concernées <table border="0"><tr><td><input checked="" type="checkbox"/> Safety Sécurité</td><td><input checked="" type="checkbox"/> EMC CEM</td><td><input type="checkbox"/> Environment Environnement</td><td><input type="checkbox"/> Quality assurance Assurance qualité</td></tr></table>			<input checked="" type="checkbox"/> Safety Sécurité	<input checked="" type="checkbox"/> EMC CEM	<input type="checkbox"/> Environment Environnement	<input type="checkbox"/> Quality assurance Assurance qualité
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Title: Amendement 1 à la CEI 60439-2, Ed. 3:
Ensembles d'appareillage à basse tension -
Partie 2: Règles particulières pour les
canalisations préfabriquées

Title: Amendment 1 to IEC 60439-2, Ed. 3: Low-
voltage switchgear and controlgear assemblies -
Part 2: Particular requirements for busbar
trunking systems (busways)

Note d'introduction

Introductory note

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

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FOREWORD

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

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

FDIS	Report on voting
XX/XX/FDIS	XX/XX/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 text of this amendment has been aligned with the content of IEC 60439-1 Ed. 4.1 of 2004-04 where applicable.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until 20XX. At this date, the publication will be

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 - withdrawn;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

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR ASSEMBLIES – Part 2: Particular requirements for busbar trunking systems (busways)

1.2 Normative references

Delete the standard IEC 60695-2-1 (and its title) from the existing list.

2 Definitions

Add the following new subclauses:

2.2.1

section

Not applicable.

2.2.2

sub-section

Not applicable.

2.2.3

compartment

Not applicable.

2.2.4

transport unit

Not applicable.

2.3.3.1

cubicle-type ASSEMBLY

Not applicable.

2.3.3.2

multi-cubicle-type ASSEMBLY

Not applicable.

2.3.3.3

desk-type ASSEMBLY

Not applicable.

2.3.3.4

box-type ASSEMBLY

Not applicable.

2.3.3.5

multi-box-type ASSEMBLY

Not applicable.

4.9.1 Resistance, reactance and impedance values of the system

In the NOTE replace “8.2.9” by “8.2.10”.

6.2 Special service conditions

Add the following new subclause:

6.2.11 Applications with high repetitive overcurrent, for example resistance welding.

7.1 Mechanical design

7.1.1.4 Resistance of insulating materials to abnormal heat

Delete this subclause.

7.1.1.5 Resistance to flame propagation

Renumber as 7.1.1.4.

7.1.1.6 Busbar trunking fire barrier unit

Renumber as 7.1.1.5.

7.1.1.7 Maintenance of circuit integrity under fire conditions

Delete this subclause.

7.1.4 Requirements for the correct connection of tap-off units

Renumber as 7.1.5.

7.1.5 Requirements for busbar trunking with several circuits

Renumber as 7.1.6.

8.1.1 Type tests

In the list, replace items h) to o) by the following:

- h) EMC tests (see 7.10 and, if applicable, annex H);
- j) verification of the resistance of insulating materials to abnormal heat (see 8.2.9);
- k) verification of the electrical characteristics of the busbar trunking system (see 8.2.10);
- l) verification of structural strength (see 8.2.11);
- m) verification of the endurance of trunking systems with trolley type tap-off facilities (see 8.2.12);
- n) verification of crushing resistance (see 8.2.13);
- o) verification of resistance to flame propagation (see 8.2.14);
- p) verification of fire barrier in building penetration (see 8.2.15).

8.2.1 Verification of temperature-rise limits

Replace the text under the heading by:

“Replace the existing text of 8.2.1.1 to 8.2.1.7 by the following:”

8.2.1.3 Temperature-rise test

Replace, in the 7th paragraph of item a), “table 3” by “table 2”.

Replace the first paragraph of item b) by the following two paragraphs:

A temperature-rise test shall be performed on each type and size of tap-off unit, with a tap-off unit having the maximum rating (I_n) in that type and size.

The tap-off unit shall be fitted to a busbar trunking, arranged as in 8.1.2.3 a), having a rating of not less than twice the rating (I_n) of the tap-off unit (or the nearest available).

Add the following subclause:

8.2.1.8 Thermal cycling tests

Plug-in tap-off units shall be submitted to thermal cycling tests.

NOTE A plug-in tap off unit is considered to be one in which the spring force is developed by the deflection of a spring member in the assembly; for the purpose of this requirement a disc spring is not considered to be a spring member.

8.2.1.8.1 Test sample

If the same design of the plug is used for a range of tap-off units of different current ratings or of different protective devices a test on one combination of busbar trunking and tap-off unit is considered to be representative of the range. The design of plug includes the physical characteristics and the material and finish (e.g. plating), if applicable. The tap-off unit shall be fitted to a busbar trunking, arranged as in 8.1.2.3 a), having a rating of not less than twice the rating (I_n) of the tap-off unit (or the nearest available). If a plug-in unit incorporating fuses is to be tested, it shall be fitted with the maximum size of fuses specified by the manufacturer. If a plug-in unit incorporating a circuit-breaker is to be tested, it shall be fitted with a circuit-breaker of the maximum rating specified by the manufacturer.

8.2.1.8.2 Conditioning

Prior to test the sample is conditioned by a number of cycles of insertion and removal of the plug-in unit in the intended manner, without load current, as follows:

Rated current A	Number of cycles of insertion and removal
$I_n \leq 63$	25
$63 < I_n \leq 200$	10
$200 < I_n$	5

8.2.1.8.3 Test procedure

The rated current of the tap-off unit is applied until the temperatures have stabilised. The temperatures as specified for the temperature-rise test are recorded. The current is switched off and the sample allowed to return to room temperature.

The sample is then subjected to two successive sequences of current cycling. Each sequence consists of 42 cycles. Each cycle consists of:

- a) 3 hours ON at rated current and 3 hours OFF, or
- b) 2 hours ON at rated current and 2 hours OFF, if the average temperatures taken at the end of the initial 2-hour 'ON' period are within 5 K of the temperatures recorded at the end of the stabilisation run.

The temperature is measured at the end of the 42nd 'ON' period and at the end of the 84th 'ON' period.

8.2.1.8.4 Results to be obtained

The temperatures taken after the 84th cycle shall not be more than 5 K higher than:

- a) the temperatures recorded at the end of the stabilisation run, and
- b) the temperatures recorded at the end of the 42nd 'ON' period.

8.2.3 Verification of short-circuit withstand strength

Delete the following two subclauses:

8.2.3.1.1

8.2.3.1.2

8.2.3.2.1 Test arrangement

Add a new sentence to the first paragraph:

A greater length than 6 m may be used in which case the actual test current must be equal to the rated short-time withstand current or the peak withstand current, as applicable.

8.2.3.2.5 Results to be obtained

In the first paragraph delete the second sentence and replace with:

The supporting insulating parts shall not show any significant signs of deterioration, i.e. the essential characteristics of the insulation remain such that the mechanical properties of the equipment satisfy the requirements of this standard. After the test of 8.2.3.2.3 and the tests incorporating short-circuit protective devices, the tested equipment shall be capable of withstanding the dielectric test of 8.2.2 at the value of voltage from Table 10 or as prescribed in the relevant standard for the protective device for the after-test condition, as follows:

- a) Between all live parts and the enclosure, and
- b) Between each pole and the other poles connected to the enclosure.

The tests shall be made with any fuses replaced, where applicable, and with any switching device closed.

Replace the 6th and 7th paragraphs by:

In the case of distribution trunking, it shall be verified that the ability to add and remove a tap-off unit is not impaired. In this case the dielectric test of this subclause is made with tap-off units fitted to each available outlet.

Add a new subclause:

8.2.4.3 Results to be obtained

Replace the existing text by the following:

The continuity and short-circuit withstand strength of the protective circuit, whether it consists of a separate conductor or the trunking enclosure, shall not be significantly impaired.

In the case of a tap-off unit this may be verified by measurements with a current of the order of the rated current of the tap-off unit.

In the case of a busbar trunking unit, following the test and after sufficient time for the bar to cool to ambient temperature, the resistance phase to PE is measured and shall not exceed by more than 10 % the value of 8.2.4.1.

NOTE Where the trunking enclosure is used as the protective conductor, sparks and localised heating at joints are permitted, provided that they do not impair the electrical continuity and provided adjacent flammable parts are not ignited.

8.2.9 Verification of electrical characteristics of busbar trunking system

Renumber as 8.2.10

After the existing text add the following paragraphs:

The test is made on one specimen only. In case of doubt, the test shall be repeated on two further specimens.

No test is made on parts made of ceramic materials. Small parts such as washers are not subjected to the test of this subclause.

8.2.10 Verification of structural strength

Renumber as 8.2.11.

Replace "8.2.10.1", "8.2.10.2", and "8.2.10.3" by "8.2.11.1", "8.2.11.2", and "8.2.11.3" respectively in the dashed list.

8.2.10.1 Verification of structural strength with normal mechanical loads

Renumber as 8.2.11.1.

8.2.10.1.1

Renumber as 8.2.11.1.1.

8.2.10.1.2

Renumber as 8.2.11.1.2.

Replace "8.2.10.1.1" by "8.2.11.1.1" in the first paragraph.