

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

**EN IEC 62477-
1:2023/AC:2024-04**

April 2024

ICS 29.200

English Version

**Safety requirements for power electronic converter systems and
equipment - Part 1: General
(IEC 62477-1:2022/COR1:2024)**

Exigences de sécurité applicables aux systèmes et
matériels électroniques de conversion de puissance - Partie
1: Généralités
(IEC 62477-1:2022/COR1:2024)

Sicherheitsanforderungen an Leistungselektronik-
Umrichtersysteme und -betriebsmittel - Teil 1: Allgemeines
(IEC 62477-1:2022/COR1:2024)

This corrigendum becomes effective on 26 April 2024 for incorporation in the English language version of the EN.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Endorsement notice

The text of the corrigendum IEC 62477-1:2022/COR1:2024 was approved by CENELEC as EN IEC 62477-1:2023/AC:2024-04 without any modification.

INTERNATIONAL ELECTROTECHNICAL COMMISSION
COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

IEC 62477-1
Edition 2.0 2022-05

IEC 62477-1
Édition 2.0 2022-05

**SAFETY REQUIREMENTS FOR POWER
ELECTRONIC CONVERTER SYSTEMS AND
EQUIPMENT**

Part 1: General

**EXIGENCES DE SÉCURITÉ APPLICABLES AUX
SYSTÈMES ET MATÉRIELS ÉLECTRONIQUES
DE CONVERSION DE PUISSANCE**

Partie 1: Généralités

CORRIGENDUM 1

Corrections to the French version appear after the English text.

Les corrections à la version française sont données après le texte anglais.

3.33

Replace the term and definition (but not the note) with the following new term and definition:

(electrical) installation

assembly of electrical equipment to fulfil specific purposes

Note 1 to entry: The word "installation" is also used in this document to denote the process of installing a *PECS*. In these cases, the word does not appear in italics.

[SOURCE: IEC 60050-826:2022, 826-10-01, modified – the note to entry has been added.]

3.36

Replace, in the term, "LV" with "LV" (in bold).

3.68

Replace, in the term, "SCPD" with "SCPD" (in normal bold).

3.74

Replace, in the term, "SPD" with "SPD" (in bold).

4.3.1 General

Replace the sixth paragraph with the following new paragraph:

For marking, see 6.2.1.4.

4.3.3 Short-circuit coordination (backup protection)

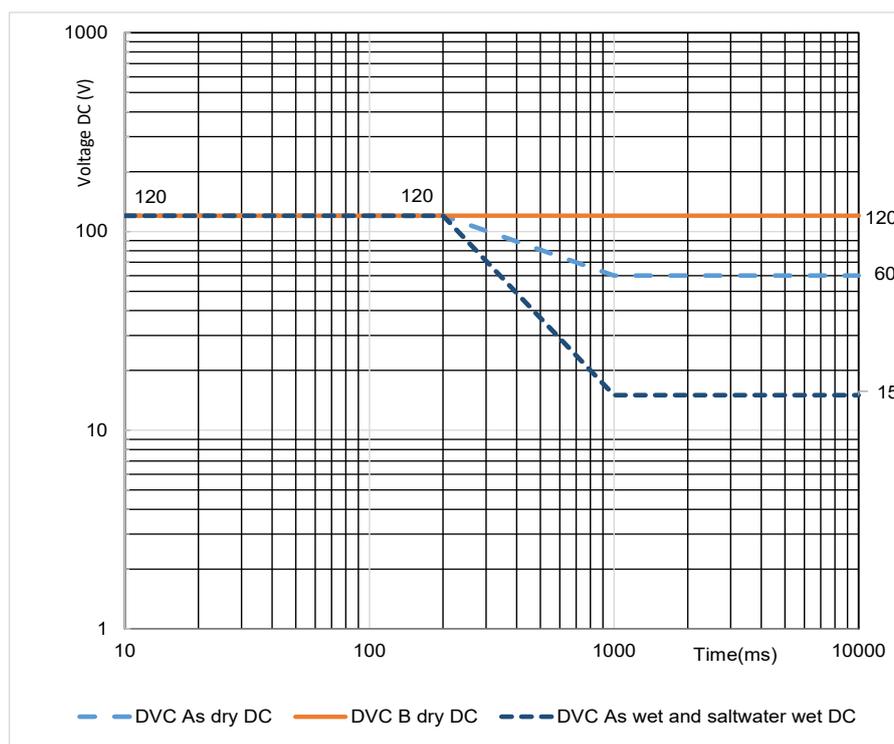
Replace the fifth paragraph with the following new paragraph:

Compliance shall be checked by

- visual inspection in 5.2.1, and
- simulation or tests of 5.2.4.4 and 5.2.4.5

Figure 5 – Time-voltage zones for accessible circuits of DVC As and DVC B – DC during single fault conditions

Replace Figure 5 with the following new figure:



4.4.7.1.4 Overvoltage category (OVC)

Replace, in the second paragraph, the second bullet point starting with “Equipment of overvoltage category III (OVC III) is equipment...”, with the following new bullet point:

- PECS of overvoltage category III (OVC III) is equipment in fixed installations and for cases where the reliability and the availability of the equipment are subject to special requirements.

4.4.7.2.2 SPD monitoring

Replace the first paragraph with the following new paragraph:

If the PECS manufacturer bundles an external SPD with their product for the purpose of overvoltage category reduction, this device shall have a monitoring circuit as required in 4.4.7.2.3 or 4.4.7.2.4 that enables the PECS to create an indication when the device is damaged by an overvoltage. If the SPD is internal to a PECS, the test of 5.2.3.15 applies.

4.4.7.4.2 Clearances for reinforced insulation

Replace in the first paragraph, the first bullet point with the following new text:

- the next higher value of impulse withstand voltage in column 1 of Table 8;

4.4.7.4.5 Clearance to conductive enclosures

Replace, in the second paragraph, "During and following" with the following:

"After"

4.11.10.3 Connection to external conductors

Replace the last paragraph with the following new paragraph:

For marking, see 6.3.7.4.1.

4.12.6 Strain relief

Replace, in the third paragraph, item c) with the following new text:

- c) the cord shall not be damaged when subjected to a torque of the value and time shown in 5.2.2.8 as close as possible to the external end of the cord strain relief or bushing;

Table 23 – Test overview

Replace the fourth row with the following new row:

Clearance and creepage distances test	X			4.4.7.4, 4.4.7.5	5.2.2.1
---------------------------------------	---	--	--	------------------	---------

5.2.2.4.2.1 General

Replace, in the fourth paragraph, "During" with:

"After"

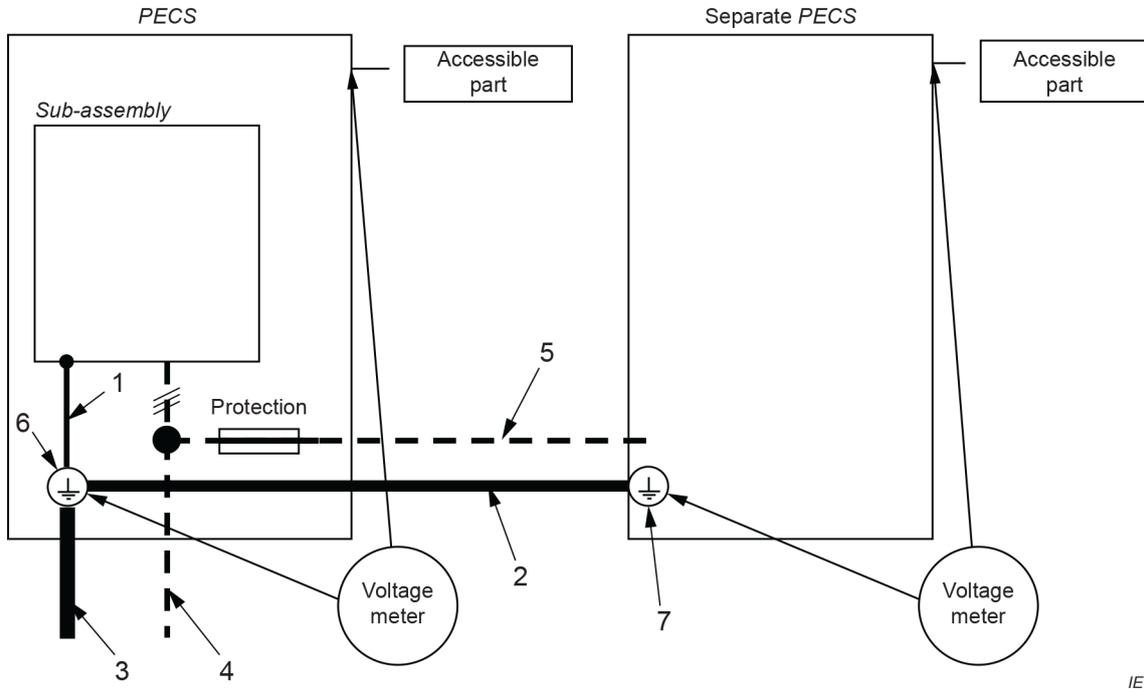
5.2.3.3 Alternative to impulse withstand voltage test (type test, sample test)

Add, in the fifth paragraph, after the last sentence, the following new sentence:

The altitude correction according to Table 26 applies.

Figure 18 – Protective equipotential bonding impedance test for separate PECS with power fed from the PECS with protection for the power cable

Replace Figure 18 with the following new figure:



5.2.3.13.2 Standard test procedure for non-separable thin sheet material (type test)

Replace, in the second paragraph "material" with "material".

5.2.3.13.3 Mandrel test (type test)

Replace, in the second paragraph, "material" with "material".

Table 32 – AC short-time withstand current test, minimum PECS requirements

Replace footnote b with the following new footnote:

^b Values compatible with Table 104 of IEC 62040-1:2017.

Table 33– Environmental tests

Replace Table 33 with the following new table:

Test condition	Indoor conditioned IEC 60721-3-3	Indoor unconditioned IEC 60721-3-3	Outdoor unconditioned IEC 60721-3-4
Climatic	Dry heat (see 5.2.6.3.1) Damp heat (see 5.2.6.3.2)	Dry heat (see 5.2.6.3.1) Damp heat (see 5.2.6.3.2)	Dry heat (see 5.2.6.3.1) Damp heat (see 5.2.6.3.2)
Chemically active substances	No test requirement	No test requirement	Salt mist ^a (see 5.2.6.5)
Mechanically active substances	No test requirement	No test requirement	Dust (see 5.2.6.6) Sand (see 5.2.6.7)
Mechanical	Vibration (see 5.2.6.4)	Vibration (see 5.2.6.4)	Vibration (see 5.2.6.4)
Biological	No test requirement	No test requirement	No test requirement
UV resistance	No test requirement	No test requirement	see 5.2.5.9

^a Refer to footnote ^a in Table 18.

6.1 General

Replace, in the second paragraph, “It” with “This information”.

Table 40 – Marking location

Replace Table 40 with the following new table:

Information	Subclause reference	Location ^a					Technical subclause reference
		1	2	3	4	5	
Identifying the product	6.2.1.2	X	X		X	X	4.1
Electrical ratings for each <i>port</i>	6.2.1.3	X	X			X	4.1
Supplementary information for each <i>port</i>	6.2.1.4					X	4.1
Liquid cooled <i>PECS</i>	6.2.1.5	X	X	X		X	4.1
General <i>PECS</i> marking	6.2.1.6					X	4.1
<i>Accessories</i> ^b	6.2.2	X	X		X	X	4.1
IP rating for enclosed <i>PECS</i>	6.3.2	X	X			X	4.1
Dimensional and mounting drawings	6.3.2					X	4.1
Mass information	6.3.2	X	X		X	X	4.1
Environment	6.3.3					X	4.9
Handling and mounting	6.3.4					X	4.2
<i>Enclosure</i> temperature	6.3.5					X	4.6.4.3
<i>Open type PECS</i>	6.3.6					X	4.4.3.3, 4.6.4.3
Interconnection and wiring diagrams	6.3.7.2					X	4.1, 4.2
Conductor (cable) selection	6.3.7.3					X	4.11.10.2
Identification of <i>field wiring terminals</i>	6.3.7.4.1	X	X	X		X	4.11.5
Other details of <i>field wiring terminals</i>	6.3.7.4.2					X	4.11.10.3
Plug and socket-outlets	6.3.7.5	X	X	X		X	4.11.7
Commissioning	6.3.8					X	4.1, 4.2
Accessible parts and circuits	6.3.9.1	X				X	4.4.3.3, 4.4.2.1
<i>Protective equipotential bonding circuit</i>	6.3.9.3	X	X			X	4.4.4.2, 4.4.4.3.2,

Information	Subclause reference	Location ^a					Technical subclause reference
		1	2	3	4	5	
Touch current or high leakage current	6.3.9.4	X				X	4.4.4.3.3
Compatibility with RCD	6.3.9.5	X				X	4.4.8
External protective devices	6.3.9.6					X	4.3.1, 4.3.3
Fire enclosures	6.3.9.7					X	4.6.3.1
General information for intended use	6.4.1					X	4.2
Adjustment	6.4.2	X				X	4.2
Isolating devices and disconnects	6.4.3.2	X	X	X		X	4.1
Hot surface	6.4.4	X	X	X		X	4.6.4.3
Control and device marking	6.4.5	X	X	X		X	4.2
Manufacturing date	6.5.1.2	X	X				4.2
Safety information	6.5.1.3					X	4.4.3.3
Capacitor discharge	6.5.2	X		X		X	4.4.9, 4.5.2
Auto restart/bypass connection	6.5.3	X		X		X	4.2
Other hazards	6.5.4					X	4.2
PECS with multiple sources of supply	6.5.5	X				X	4.8
Replaceable fuses in neutral	6.5.6	X				X	4.3.4
^a Location:	<ol style="list-style-type: none"> 1. On PECS, visible when the enclosure cover is on and the door (see 4.4.3.3) is closed (see 6.4.3) 2. On PECS, visible when opening a door (see 4.4.3.3) or removing a cover (see 6.4.3) 3. On PECS, separate self-adhesive label shipped with the device 4. On packaging 5. Documentation 						
	For marking locations 1, 2 and 3, more than one X means that the appropriate location may be any one of these according to the construction of the product and as indicated in the subclause referenced.						
^b	Location 1, 2 and 4 are the required location for the accessory, and location 5 is for the PECS.						

6.2.1.4 Supplementary information for each port

Replace, in the seventh bullet, the second dash with the following new text:

- short-time withstand current (I_{CW}), duration and the peak withstand current (I_{pk}) according to 4.3.2.3.

6.2.1.6 General PECS marking

Replace the bulleted list with the following new list:

- intended use (see 4.1);
- specified accessories (see 4.1);
- reference(s) to relevant standard(s) for manufacture, test, or use;
- reference to documentation for installation, use and maintenance.

6.3.9.3 Protective equipotential bonding circuit

Replace the text of 6.3.9.3 with the following new text:

The *protective equipotential bonding* circuit in 4.4.4.2 shall be marked as follows.

- For the means of connection for the external *PE conductor* in 4.4.4.3.2, see 6.3.9.2.2;

NOTE 1 The following text is copied and modified from IEC 60204-1:2016, 13.2.2

- The internal *protective equipotential bonding* conductor shall be readily distinguishable from other conductors by shape, location, marking, or colour;
- Where the internal *protective equipotential bonding* conductor can be easily identified by its shape, position, or construction (for example a braided conductor, uninsulated stranded conductor), no additional marking is required;
- When identification is by colour alone, the bicolour combination green-and-yellow shall be used throughout the length of the conductor, or where the insulated conductor is not readily *accessible* or is part of a multicore cable, colour coding throughout its length is not necessary. However, where the conductor is not clearly visible throughout its length, the ends or *accessible* locations shall be clearly identified by
 - the symbol IEC 60417-5017:2006-08 (see Annex C),
 - the bicolour combination green-and-yellow, or
 - markings, if explained in the documentation.

NOTE 2 The following text is copied and modified from IEC 60950-1:2005 and IEC 60950-1:2005/AMD1:2009, 1.7.7.1.

- However, where terminals for the connection are provided on a *component* or subassembly, either the symbol IEC 60417-5017:2006-08 or the symbol IEC 60417-5019:2006-08 is permitted (see Annex C).

As required in 4.4.4.2.1, where screws for connecting the *protective equipotential bonding* are used for other purpose, this shall be specified in the documentation.

6.5.6 Replaceable fuses in neutral of single-phase PECS

Replace, in the third paragraph, the bulleted list with the following new list:

- the electric shock hazard symbol IEC 60417-6042:2010-11 or ISO 7010-W012:2011-05; and
- the fuse symbol IEC 60417-5016:2002-10; and an indication that the fuse is in the neutral N (see Annex C).