



SLOVENSKI STANDARD
SIST EN 62920:2017/oprAB:2023

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Fotonapetostni energetski sistemi - Zahteve EMC in preskusne metode za opremo močnostnih pretvornikov - Dopnilo AB

Photovoltaic power generating systems - EMC requirements and test methods for power conversion equipment

Photovoltaische Stromerzeugungssysteme - EMV-Anforderungen und Prüfverfahren für Leistungsumrichter

Systèmes de production d'énergie photovoltaïque - Exigences de CEM et méthodes d'essai pour les équipements de conversion de puissance

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27.160	Sončna energija	Solar energy engineering
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Photovoltaic power generating systems - EMC requirements and test methods for power conversion equipment

To be completed

Photovoltaische Stromerzeugungssysteme - EMV-Anforderungen und Prüfverfahren für Leistungsumrichter

This draft amendment prAB, if approved, will modify the European Standard EN 62920:2017; it is submitted to CENELEC members for enquiry.

Deadline for CENELEC: 2023-07-07.

It has been drawn up by CLC/TC 82.

If this draft becomes an amendment, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

This draft amendment was established by CENELEC in three official versions (English, French, German).

A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

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European foreword

This document (EN 62920:2017/prAB:2023) has been prepared by CLC/TC 82 “Solar photovoltaic energy systems”.

This document is currently submitted to the Enquiry.

The following dates are proposed:

- latest date by which the existence of this document has to be announced at national level (doa) dor + 6 months
- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) dor + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dor + 36 months (to be confirmed or modified when voting)

This document is read in conjunction with EN 62920:2017, EN 62920:2017/A11:2020, and EN 62920:2017/A1:2021.

EN 62920:2017/prAB:2023 includes the following modifications:

- changes to satisfy the European requirements for a harmonized standard to be recognized by the European Commission;
- normative references updated; [i/catalog/standards/sist/b388d313-3a73-4141-85e3-1e83f084adce/sist-en-62920-2017-oprab-2023](https://standards.iteh.ai/SIST/EN-62920-2017/oprAB-2023)
- Annex ZA updated;
- both repetition frequencies of 5kHz and 100kHz for electrical fast transient burst test applied;
- conducted emissions measurement requirements on signal and control ports lines set to 3 m.

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), see informative Annex ZZ, which is an integral part of this document.

EN 62920:2017/prAB:2023 (E)

1 Modification to Contents

Replace "Table 10" with "Table 11".

Replace "Table 11" with "Table 12".

Replace "Table 12" with "Table 13".

Replace "Table 13" with "Table 14".

Replace "Table 14" with "Table 10".

2 Modification to the Scope

Replace the last paragraph of the Scope with the following:

"When compliance with EMC requirements at the test site cannot be shown due to technical reasons of the test site, PCE can be assessed in situ. However, only high frequency emission requirements for in situ assessment are specified in CISPR 11."

3 Modification to Clause 3, "Terms and definitions"

Replace term entry 3.3 with the following:

"

3.3

photovoltaic module

PV module

complete and environmentally protected assembly of interconnected photovoltaic cells

[SOURCE: IEC TS 61836:2016, 3.1.48.7, modified – The note has been deleted.]"

4 Modifications to Clause 5, "Test setup for type test"

In 5.2.1 General, replace the first paragraph with the following:

"For testing of immunity and emission requirements all components of the PCE shall be used under conditions in accordance with installation instructions to be applied."

In 5.2.3.1 Harmonics, replace the existing paragraph with the following

"Detailed instruction for measurements is defined in IEC 61000-4-7. The test procedures are given in IEC 61000-3-2 for ≤ 16 A or IEC 61000-3-12 for > 16 A and ≤ 75 A. If auxiliary AC power ports are connected to a public low voltage AC mains power distribution network or other low voltage AC mains installation, the auxiliary AC power shall be assessed as well. Examples of measurement circuit for harmonic currents are illustrated in B.2.1."

In 5.2.3.2 Voltage fluctuations and flicker, replace the existing paragraph with the following:

"Detailed instruction for measurements is defined in IEC 61000-4-7. Test procedures are given in IEC 61000-3-3 for ≤ 16 A or IEC 61000-3-11 for ≤ 75 A. If auxiliary AC power ports are connected to a public low voltage AC mains power distribution network or other low voltage AC mains installation, the auxiliary AC power shall be assessed as well. Examples of test circuit are given in B.2.2."

5 Modifications to Clause 6, "Operating conditions during testing"

In 6.2 Operating conditions for immunity requirements test, replace the existing first sentence with the following:

"The immunity test shall be carried out within the normal operating range specified for intended use."

In 6.4 Operating conditions for high frequency emission requirement test, replace the existing first sentence with the following:

“The operating conditions for the high frequency emission test shall be carried out under standby and operating modes of intended use and worst-case conditions determined by preliminary testing.”

6 Modifications to Clause 7, “Immunity requirements”

In 7.1 Requirements:

insert the following sentence after the first sentence:

“In Table 1 and Table 2 both repetition frequencies of 5kHz and 100kHz for electrical fast transient burst test (IEC 61000-4-4) shall be applied.”

replace Table 1 Immunity requirements for class B PCE with the following table:

“

Table 1 — Immunity requirements for class B PCE

Port	Phenomenon	Reference standard for test method	Test level	Performance criteria
Enclosure	Electrostatic discharge (ESD)	IEC 61000-4-2	±4 kV contact discharge ±8 kV air discharge	B
	Radiated, radio-frequency, electromagnetic fields	IEC 61000-4-3	80 MHz to 1 000 MHz 3 V/m 80 % AM (1 kHz)	A
	Radiated, radio-frequency, electromagnetic fields	IEC 61000-4-3	1,4 GHz to 6 GHz 3 V/m 80 % AM (1 kHz)	A
AC power	Electrical fast transient/burst	IEC 61000-4-4	±1 kV 5 kHz and 100 kHz ^a	B
	Surge	IEC 61000-4-5	±1 kV (line to line) ±2 kV (line to earth)	B
	Conducted disturbances induced by radio-frequency fields	IEC 61000-4-6	0,15 MHz to 80 MHz 3 V 80 % AM (1 kHz)	A
DC power	Electrical fast transient/burst	IEC 61000-4-4	±0,5 kV 5 kHz and 100 kHz ^a	B

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Port	Phenomenon	Reference standard for test method	Test level	Performance criteria
	Surge ^c	IEC 61000-4-5	±0,5 kV (line to line) ±1 kV (line to earth)	B
	Conducted disturbances induced by radio-frequency fields	IEC 61000-4-6	0,15 MHz to 80 MHz 3 V 80 % AM (1kHz)	A
Signal and control (wired network)	Electrical fast transient/burst ^b	IEC 61000-4-4	±0,5 kV 100 kHz	B
	Conducted disturbances induced by radio-frequency fields	IEC 61000-4-6	0,15 MHz to 80 MHz 3 V 80 % AM (1 kHz)	A

^a The test shall be performed at both repetition frequencies. The use of 5 kHz repetition frequency is traditional; however, 100 kHz is closer to reality.

^b Applicable only to ports or interfaces with cables whose total length may exceed 3 m according to the intended use.

^c Applicable only to ports with cables whose total length according to the intended use exceed 30 m or intended for outdoor. In the case of shielded cable, a direct coupling to the shield is applied. This immunity requirement does not apply to field bus or other signal interfaces where the use of surge protection devices is not practical for technical reasons. The test is not required where normal functioning cannot be achieved because of the impact of the CDN on the PCE even if an alternative test method shown in D.2.2 is applied.

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replace Table 2 Immunity requirements for class a PCE with the following table:

Table 2 — Immunity requirements for class A PCE

Port	Phenomenon	Reference standard for test method	Test level	Performance criteria
Enclosure	Electrostatic discharge (ESD)	IEC 61000-4-2	±4 kV contact discharge ±8 kV air discharge	B
	Radiated, radio-frequency, electromagnetic fields	IEC 61000-4-3	80 MHz to 1 000 MHz 10 V/m 80 % AM (1 kHz)	A
	Radiated, radio-frequency, electromagnetic fields	IEC 61000-4-3	1,4 GHz to 6 GHz 3 V/m 80 % AM (1 kHz)	A
AC power	Electrical fast transient/burst ^b	IEC 61000-4-4	±2 kV 5 kHz and 100 kHz ^a	B

Port	Phenomenon	Reference standard for test method	Test level	Performance criteria
	Surge ^b	IEC 61000-4-5	±1 kV (line to line) ±2 kV (line to earth)	B
	Conducted disturbances induced by radio-frequency fields ^b	IEC 61000-4-6	0,15 MHz to 80 MHz 10 V 80 % AM (1 kHz)	A
DC power	Electrical fast transient/burst	IEC 61000-4-4	±1 kV 5 kHz and 100 kHz ^a	B
	Surge ^d	IEC 61000-4-5	±0,5 kV (line to line) ±1 kV (line to earth)	B
	Conducted disturbances induced by radio-frequency fields ^b	IEC 61000-4-6	0,15 MHz to 80 MHz 10 V 80 % AM (1 kHz)	A
Signal and control (wired network)	Electrical fast transient/burst ^c	IEC 61000-4-4	±1 kV 5 kHz and 100 kHz ^a	B
	Surge ^d	IEC 61000-4-5	±1 kV (line to earth)	B
	Conducted disturbances induced by radio-frequency fields	IEC 61000-4-6	0,15 MHz to 80 MHz 10 V 80 % AM (1 kHz)	A
<p>^a The test shall be performed at both repetition frequencies. The use of 5 kHz repetition frequency is traditional; however, 100 kHz is closer to reality.</p> <p>^b PCE-MV may be tested on the LV side in case that test equipment is not applicable to MV side.</p> <p>^c Applicable only to ports or interfaces with cables whose total length may exceed 3 m according to the intended use.</p> <p>^d Applicable only to ports with cables whose total length according to the intended use may exceed 30 m or intended for outdoor. In the case of shielded cable, a direct coupling to the shield is applied. This immunity requirement does not apply to field bus or other signal interfaces where the use of surge protection devices is not practical for technical reasons. The test is not required where normal functioning cannot be achieved because of the impact of the CDN on the PCE even if an alternative test method shown in D.2.2 is applied.</p>				

replace the three sentences directly below Table 2 with the following Note:

“

NOTE In some countries, additional immunity requirements against voltage dips and interruption are specified with their own grid codes. Those requirements may have to be applied to comply with national regulations or contractual agreement between system operators and operators of AC mains networks.”

In 7.1 Performance criteria:

replace the second sentence of 7.2 with the following:

“A precise description and definition of performance criterion shall be noted in the test report based on the intended use and the following criteria.”

and insert the following after the second sentence of 7.2:

“Only the performance criteria specified in this document apply.”

7 Modifications to Clause 8, “Emission requirements”

In 8.1 Low frequency:

replace the third and fourth paragraph with the following:

“IEC 61000-3-2 is applicable only for products ≤ 16 A and IEC 61000-3-12 only for products ≤ 75 A, there is a gap in the standards for products > 75 A.

Note For PCE > 75 A, contact distribution network operators (DNOs) for the appropriate harmonics level. For industrial or private location, levels need to be set at the installation level by taking into account the local DNO’s information. See IEC TR 61000-3-6 installation limits for high power products connected to MV and HV networks, and IEC TR 61000-3-14 for high power products connected to LV networks.”

and replace the sixth and 7th paragraphs with the following:

“IEC 61000-3-3 is applicable only for products ≤ 16 A and IEC 61000-3-11 only for products ≤ 75 A, there is a gap in the standards for products > 75 A.

NOTE For PCE > 75 A, IEC 61000-3-11 can be used for test method and the limit for Pst (short time flicker) equal to 1,0 for generators exporting energy to power supply system. Without limits the performance of the PCE can be demonstrated within a datasheet to the DNOs.”

In 8.2.1.2 Disturbance voltage limits at the AC power port, replace the second paragraph with the following:

“Limits for the disturbance voltage at the auxiliary AC power port are provided in Table 6 and Table 7. Selection of the appropriate set of limits at each auxiliary AC power port shall be based on the rated AC power of the PCE.”

and replace Table 6 with the following:

Table 6 — Disturbance voltage limits at the AC mains power port for class A PCE measured on a test site

Frequency range MHz	Rated power of ≤ 20 kVA		Rated power of > 20 kVA ^a		High power electronic systems and equipment, rated power of > 75 kVA ^b	
	Quasi-peak dB(μ V)	Average dB(μ V)	Quasi-peak dB(μ V)	Average dB(μ V)	Quasi-peak dB(μ V)	Average dB(μ V)
0,15 to 0,50	79	66	100	90	130	120
0,50 to 5	73	60	86	76	125	115
5 to 30	73	60	90 Decreasing linearly with logarithm of frequency to 73	80 60	115	105

At the transition frequency, the more stringent limit shall apply.

For class A PCE intended to be connected solely to isolated neutral or high impedance earthed (IT) industrial power distribution networks (see IEC 60364-1), the limits for equipment with a rated power > 75 kVA can be applied.

Limits only apply to low voltage AC mains power ports.

Selection of the appropriate set of limits shall be based on the rated AC power.