



SLOVENSKI STANDARD  
SIST EN 61194:2001  
01-september-2001

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Characteristic parameters of stand-alone photovoltaic (PV) systems

Charakteristische Parameter von photovoltaischen(PV)-Inselsystemen

Paramètres descriptifs des systèmes photovoltaïques autonomes

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Ta slovenski standard je istoveten z: EN 61194:1995

SIST EN 61194:2001

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**ICS:**

27.160      Ú[ } } aA } ^i\* 3æ      Solar energy engineering

**SIST EN 61194:2001**      en

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 61194**

June 1995

ICS 31.260

Descriptors: Solar energy, stand-alone photovoltaic systems, array field, environmental parameters, performance parameters

English version

**Characteristic parameters of stand-alone photovoltaic (PV) systems  
(IEC 1194:1992, modified)**

Paramètres descriptifs des systèmes  
photovoltaïques autonomes  
(CEI 1194:1992, modifiée)

Charakteristische Parameter von  
photovoltaischen(PV)-Inselsystemen  
(IEC 1194:1992, modifiziert)

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This European Standard was approved by CENELEC on 1995-05-15. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

### Foreword

The text of the International Standard IEC 1194:1992, prepared by IEC TC 82, Solar photovoltaic energy systems, together with common modifications prepared by Reporting Secretariat SR 82, was submitted to the formal vote and was approved by CENELEC as EN 61194 on 1995-05-15.

The following dates were fixed:

- latest date by which the EN has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 1996-07-01
  - latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 1996-07-01
- 

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## Endorsement notice

The text of the International Standard IEC 1194:1992 was approved by CENELEC as a European Standard with agreed common modifications as given below.

## COMMON MODIFICATIONS

Replace subclause 4.1.2 by the following:

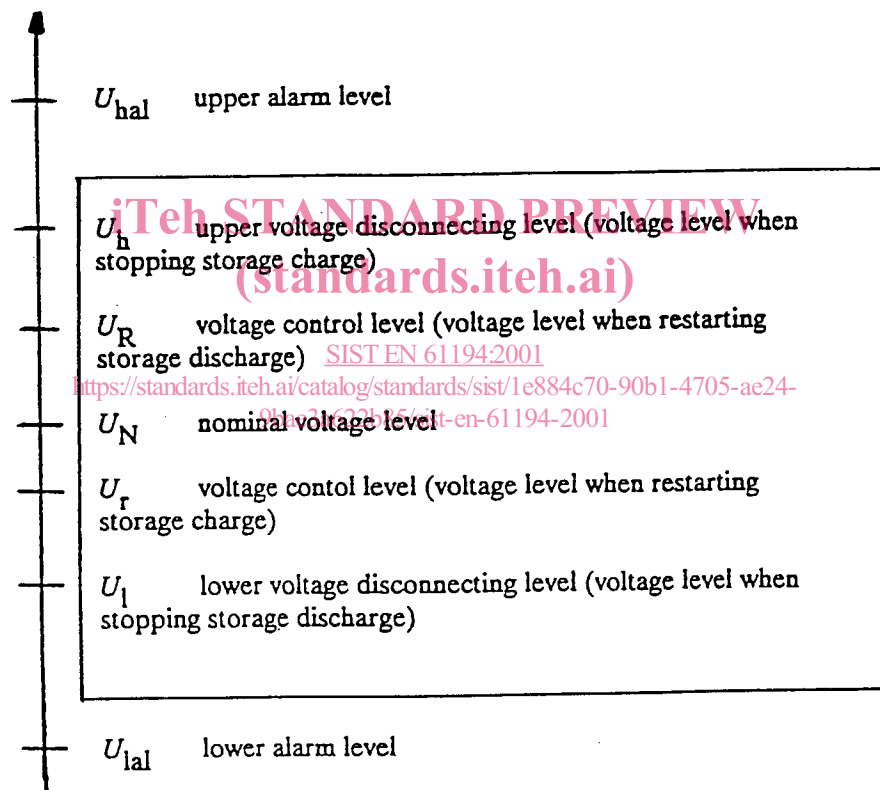
## 4.1.2 Storage control unit

Voltage control levels

at  $T_{amb} = 20\text{ }^{\circ}\text{C}$ ,  $T_{amb}$  maximum,  $T_{amb}$  minimum

(V)

(U)



- type of control

- depth of battery discharge

## 4.2.2 Long-term performance (during reference period(s))

Replace in the fourth line " $E_{pV}$ " by " $E_{PV}$ "

Add as a third parameter to be determined :

$E_U$  active electrical energy delivered to loads (kWh) with the same conditions as above

Replace in the fourteenth line " $h_c = 100 E_{pU}/H_{lrp}$ " by " $h_c = 100 E_{PV}/H_{lrp}$ "

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**NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD**

**CEI  
IEC  
1194**

Première édition  
First edition  
1992-12

**Paramètres descriptifs des  
systèmes photovoltaïques autonomes**

**iTeh STANDARD PREVIEW**  
**Characteristic parameters  
of stand-alone photovoltaic (PV) systems**

SIST EN 61194:2001

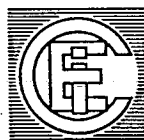
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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
PRICE CODE

**N**

Pour prix, voir catalogue en vigueur  
For price, see current catalogue

## CONTENTS

	Page
FOREWORD .....	5
Clause	
1 Scope .....	7
2 PV-system description .....	7
2.1 Array field .....	7
2.1.1 Modules .....	7
2.1.2 Panels .....	7
2.1.3 Array .....	9
2.1.4 Array field .....	9
2.1.5 Orientation .....	9
2.2 Storage sub-system .....	9
2.2.1 Cell .....	9
2.2.2 Battery .....	11
2.2.3 Storage control unit .....	11
2.3 Energy control and conversion .....	13
2.3.1 Inverter .....	13
2.3.2 Other devices .....	13
2.4 Loads .....	13
2.4.1 Entire load .....	13
2.4.2 Each load .....	15
2.5 Backup generators .....	15
2.6 System electrical layout .....	15
2.6.1 Schematic block diagram .....	15
2.6.2 Array cabling (schematic block diagram with diodes) .....	15
2.6.3 Protection and safety devices – Overall layout .....	15
3 Environmental parameters .....	17
3.1 Time periods to be considered .....	17
3.1.1 Reference period .....	17
3.1.2 Period of intended use .....	17
3.2 Site .....	17
3.3 Reference pyranometric data .....	19
4 Performance parameters .....	19
4.1 Instantaneous performance (power related) .....	21
4.1.1 Array field .....	21
4.1.2 Storage control unit .....	21
4.1.3 Storage sub-system .....	23
4.2 Cumulative performance during a time period (energy related) .....	23
4.2.1 Short-term performance .....	23
4.2.2 Long-term performance (during reference period(s)) .....	23
Annex A – Array field and storage sub-system components .....	27



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## CHARACTERISTIC PARAMETERS OF STAND-ALONE PHOTOVOLTAIC (PV) SYSTEMS

### FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a world-wide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

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International Standard IEC 1194 has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

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

DIS	Report on Voting
82(CO)52	82(CO)73

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

Annex A is for information only.

## CHARACTERISTIC PARAMETERS OF STAND-ALONE PHOTOVOLTAIC (PV) SYSTEMS

### 1 Scope

This International Standard defines the major electrical, mechanical and environmental parameters for the description and performance analysis of stand-alone photovoltaic systems. The parameters as listed are presented in a standard format for the purposes of procurement and performance analysis:

- measurement of short- and long-term on-site photovoltaic-system performance;
- comparison between on-site measured and projected performance, both extrapolated to standard test conditions (STC).

Specialized documents related to specific applications and/or to specific uses (designing, performance prediction and measurement) may be issued, if necessary.

NOTE - The minimum requirements, when applicable, are represented in boxes in the figures and the text. Recommended optional requirements are also given.

Example

$U_N$	nominal voltage	minimum requirement
$W$	Weight	optional requirement

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The numbering of subclauses is arbitrary and may not be the same for specific data sheets.

### 2 PV-system description

#### 2.1 Array field

See annex A for example of array field components.

##### 2.1.1 Modules

Its characteristics as defined by the data sheets

$P_{max}$	peak power at STC	(W)
$A_m$	overall area (including frame)	(m <sup>2</sup> )

##### 2.1.2 Panels

$n$	number of modules in a panel	
$A_p$	overall panel area (including frame, module inter spacing, reflectors, etc.)	(m <sup>2</sup> )

## 2.1.3 Array

$N_M$	number of modules	
$A_a$	overall area	(m <sup>2</sup> )

## 2.1.4 Array field

$N_m$	total number of modules
$N_p$	total panel number in PV array field
	$N_p = N_m / n$

$P_0$	nominal peak power	(W)
	$P_0 = N_m \cdot P_{max}$	
$A$	overall area A equals the sum of array areas	(m <sup>2</sup> )
-	design wind speed	(m.s <sup>-1</sup> )
-	design snow load	(kg. m <sup>-2</sup> )
$U_0$	open-circuit voltage	(U)

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## 2.1.5 Orientation

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$\beta$	titled angle from horizontal	(degrees)
$\alpha$	azimuth from south in northern hemisphere, from north in southern hemisphere, negative to east, positive to west	(degrees)
-	tracking, if applicable	
-	adjustable orientation, if applicable (number of the yearly adjustments and duration of each period)	

## 2.2 Storage sub-system

See annex A for example of storage sub-system components.

## 2.2.1 Cell

Its characteristics as defined by the data sheets

$U_n$	nominal voltage	(U)
$C_{10}$	nominal capacity	(Ah)
$C_{100}$	rated capacity (100 h rate)	(Ah)
-	type of electrochemical cell	