SLOVENSKI STANDARD
SIST EN 50380:2003

01-julij-2003

Tehniļ ni podatki in podatki za napisne ploģļ ice fotonapetostnih modulov

Datasheet and nameplate information for photovoltaic modules

Datenblatt- und Typenschildangaben von Photovoltaik-Modulen

Spécifications particulières et informations sur les plaques de constructeur pour les modules photovoltaïques

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: **EN 50380:2003**

SIST EN 50380:2003
https://standards.iteh.ai/catalog/standards/sist/b1d214a6-06f1-47bc-8b7d-22acd4350d92/sist-en-50380-2003

ICS:

27.160 Sonļ na energija Solar energy engineering

SIST EN 50380:2003 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

SIST EN 50380:2003

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 50380:2003
https://standards.iteh.ai/catalog/standards/sist/b1d214a6-06f1-47bc-8b7d-22acd4350d92/sist-en-50380-2003

SIST EN 50380:2003

EUROPEAN STANDARD **EN 50380**

NORME EUROPÉENNE

EUROPÄISCHE NORM March 2003

ICS 27.160

English version

Datasheet and nameplate information for photovoltaic modules

Spécifications particulières et informations sur les plaques de constructeur pour les modules photovoltaïques

Datenblatt- und Typenschildangaben von Photovoltaik-Modulen

This European Standard was approved by CENELEC on 2002-12-01. 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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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.

SIST EN 50380:2003
https://standards.iteh.ai/catalog/standards/sist/b1d214a8-06f1-478c-8b7d-22acd4350d92/sist-en-50380-2003

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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

© 2003 CENELEC - All rights of exploitation in any form and by any means reserved worldwide for CENELEC members.

Ref. No. EN 50380:2003 E

SIST EN 50380:2003

Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 82 (former BTTF 86-2), Solar photovoltaic energy systems.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50380 on 2002-12-01.

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)	2003-12-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2005-12-01

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 50380:2003
https://standards.iteh.ai/catalog/standards/sist/b1d214a6-06f1-47bc-8b7d-22acd4350d92/sist-en-50380-2003

SIST EN 50380:2003

Contents

Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 50380:2003
https://standards.iteh.ai/catalog/standards/sist/b1d214a6-06f1-47bc-8b7d-22acd4350d92/sist-en-50380-2003

SIST EN 50380:2003

1 Scope

This document describes data sheet and nameplate information for non-concentrating photovoltaic modules.

The intent of this document is to provide minimum information required to configure a safe and optimal system with photovoltaic modules.

In this context, data sheet information is a technical description separate from the photovoltaic module. The nameplate is a sign in durable construction at or in the photovoltaic module.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 61215	1995	Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval (IEC 61215:1993)
EN 60904-1	1993	Photovoltaic devices – Part 1: Measurement of photovoltaic current-voltage characteristics (IEC 60904-1:1987)
EN 60904-3	1993	Photovoltaic devices – Part 3: Measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data (IEC 60904-3:1989)
IEC 60904-9	1995	Photovoltaic devices – Part 9: Solar simulator performance requirements

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 50380:2003
https://standards.iteh.ai/catalog/standards/sist/b1d214a6-06f1-47bc-8b7d-22acd4350d92/sist-en-50380-2003

3 Data sheet information

3.1 Certificate

All relevant certificates shall be listed on the data sheet.

3.2 Constructive material

The descriptions of the following materials used to build the PV module are required:

- cell type and material;
- frame material;
- front cover type.

3.3 Electrical performance

The characteristic quantities in 3.3.1 to 3.3.3 are required.

3.3.1 P_{max}, I_{sc}, V_{oc} and V_{mpp} at STC (1 000 W/m², (25 ± 2) °C, AM 1,5 according to EN 60904-3)
For a-Si modules, nominal and minimum values of maximum output power at STC must also be specified.

3.3.2 P_{max}, I_{sc}, V_{oc} and V_{mpp} at at 800 W/m², NOCT, AM 1,5

3.3.3 Reduction of efficiency from an irradiance of 1 000 W/m² to 200 W/m² (T_{Module} = 25 °C) following EN 60904-1

SIST EN 50380:2003

NOTE 1 **STC** (**S**tandard **T**est **C**onditions):
1 000 W/m² irradiance in the plane of module, module temperature 25 °C and a spectral distribution of irradiance according to air mass 1,5.

NOTE 2 **NOCT** (**N**ominal **O**perating **C**ell **T**emperature):
Module operation temperature at 800 W/m² irradiance in the plane of module, air temperature 20 °C, wind speed 1 m/s and open circuit condition.

NOTE 3
P_{max} : maximum electrical power;
V_{oc} : open circuit voltage ("**o**pen **c**ircuit");
I_{sc} : short circuit current ("**s**hort **c**ircuit");
V_{mpp} : voltage at point of maximum power ("**m**aximum **p**ower **p**oint").

3.4 General characteristics

Specify information about the connection box such as, dimensions, IP-rating, electrical connection technique (e.g. connector or wiring):

- outer dimensions (length, width) of photovoltaic module,
- total thickness of photovoltaic module, and
- the weight.

NOTE More detailed information (e.g. mounting instructions, detailed dimension drawings, kind and thickness of front cover) is recommended.

3.5 Thermal characteristics

iTeh STANDARD PREVIEW
(standards.iteh.ai)

3.5.1 NOCT value is required.

3.5.2 Temperature coefficients (TC) in [1/K] of I_{sc} and V_{oc} are required.

SIST EN 50380:2003
https://standards.iteh.ai/catalog/standards/sist/b1d314c6-06f1-47bc-8b7d-22acd4590d92/sist-en-50380-2003

NOTE 1 With the help of temperature coefficients "TC", the electrical characteristic quantity "$y_{reference}$" at the reference temperature "$T_{reference}$" can be transformed to another operating temperature "T":

$$y = y_{reference} \bullet [1 + TC \bullet (T - T_{reference})]$$

NOTE 2 Temperature coefficients with the dimension [1/K] are calculated from "determination of temperature coefficients" – EN 61215 qualification tests (no additional measurements).

NOTE 3 In the case that the TC is non-linear, give more information about the TC.

3.6 Characteristic quantities for system integration

Required are:

3.6.1 Design open circuit voltage ($\equiv V_{oc}$ at STC), maximum permissible system voltage and protection classification.

3.6.2 Limiting reverse current I_R in [A] (reverse current carrying capacity) of the photovoltaic module.

NOTE 1 Reverse current carrying capacity gives the maximal current for operation of photovoltaic module at $V \geq V_{oc}$ without permanent damages of the photovoltaic module. For operation voltages higher than open circuit voltage module, the current changes its sign. From the view of the photovoltaic module, it is then a reverse current.

NOTE 2 A photovoltaic module can be operated at the limiting reverse current I_R ($V \geq V_{oc}$) at (60 ± 2) °C air temperature (in the dark) for eight hours without a change of maximum power P_{max} of more than 5 % at control measurements at STC after the test. P_{max} and V_{oc} are the values at STC (see 3.3.1).

SIST EN 50380:2003

EXAMPLE

Example for an experimental implementation for determination of limiting reverse current (see Figure 1).

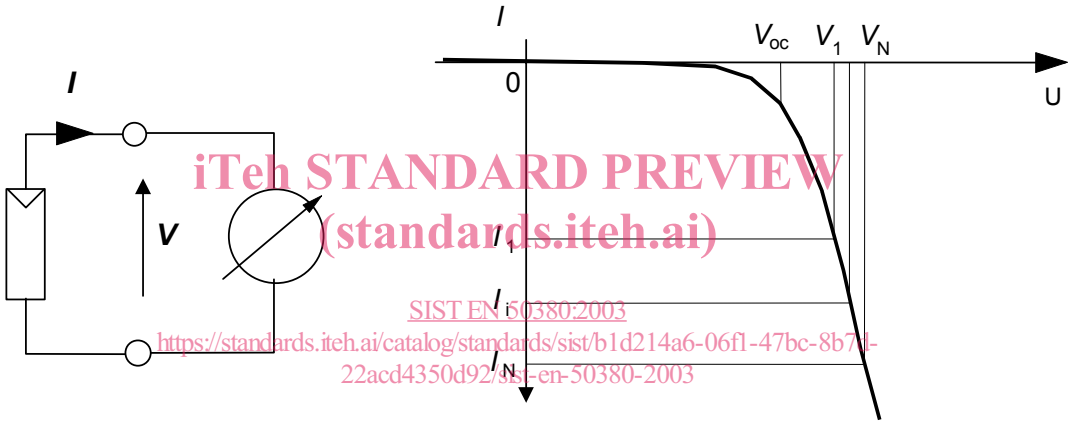
a) Determination of maximum electrical power P_{max} at STC at start of experiment.

b) Impressing a step-by-step increasing current I_1 to I_N for $V \geq V_{oc}$ for eight hours each at (60 ± 2) °C air temperature with no external irradiance (V_{oc} at STC after 3.3.1).

c) Assessment of photovoltaic module before and after each current step according to EN 61215 steps 10.1 to 10.3.

d) Maximum power at STC after step "i" (current I_i) is $P_{max,i}$.

If ΔP = | $P_{max,i}$ - P_{max} | / P_{max} ≤ 0,05 and ΔP = | $P_{max,i+1}$ - P_{max} | / P_{max} > 0,05, then the current I_I ($I \in$ {1..N}) can be guaranteed as the limiting reverse current I_R.



iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 50380:2003
https://standards.iteh.ai/catalog/standards/sist/b1d214a6-06f1-47bc-8b7f-22acd4350d92/sist-en-50380-2003

Figure 1 – Schematic explanation of experimental set-up for determination of reverse current carrying capacity

NOTE There are different definition systems for voltage and current arrows in use. Therefore this drawing may differ in some countries.

3.7 Power rating and production tolerances

3.7.1 Upper and lower production tolerances (in percent) for a given maximum power P_{max} are required.

NOTE It is possible to agree minimum power values.

3.7.2 The electrical characteristic quantities according to 3.3 have to be detected after pre-ageing in open circuit condition with ≥ 20 kWh/m² irradiance in the plane of module and considering the measurement tolerances of the (external) test laboratory.

NOTE For pre-ageing, natural sunlight or a solar simulator according to IEC 60904-9 has to be used.