

# **DAP Deutsches Akkreditierungssystem Prüfwesen GmbH**

in Zusammenarbeit mit

**Deutsche Akkreditierungsstelle Technik (DATech) e.V.**

## **Anlage zur Akkreditierungsurkunde DPT-PL-3885.00**

Gültigkeitsdauer: 2004-11-24 bis 2008-07-29

Urkundeninhaber:

**TÜV Immissionsschutz und Energiesysteme GmbH**

Am Grauen Stein  
51105 Köln

Prüfungen in den Bereichen:

**Regenerative Energien, Photovoltaische und Solarthermische Systeme und  
Komponenten sowie Umweltsimulation**

Verwendete Abkürzungen:  
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## 1. Photovoltaik und Solarthermie

### International Standards

<b>IEC 60891</b> 1987-00-00 <b>AMD 1</b> 1992-06-00	Procedures for temperature and irradiance corrections to measured I-V characteristics of crystalline silicon photovoltaic devices
<b>IEC 60904-1</b> 1987-00-00	Photovoltaic devices; part 1: measurement of photovoltaic current-voltage characteristics
<b>IEC 60904-2</b> 1989-05-00 <b>AMD 1</b> 1998-02-00	Photovoltaic devices; part 2: requirements for reference solar cells
<b>IEC 60904-3</b> 1989-03-00	Photovoltaic devices; part 3: measurement principles for terrestrial photovoltaic (PV) solar devices with reference spectral irradiance data
<b>IEC 60904-5</b> 1993-11-00	Photovoltaic devices; part 5: determination of the equivalent cell temperature (ECT) of photovoltaic (PV) devices by the open-circuit voltage method
<b>IEC 60904-6</b> 1994-09-00 <b>AMD 1</b> 1998-02-00	Photovoltaic devices - Part 6: Requirements for reference solar modules
<b>IEC 60904-7</b> 1998-03-00	Photovoltaic devices - Part 7: Computation of spectral mismatch error introduced in the testing of a photovoltaic device
<b>IEC 60904-9</b> 1995-09-00	Photovoltaic devices - Part 9: Solar simulator performance requirements
<b>IEC 60904-10</b> 1998-02-00	Photovoltaic devices - Part 10: Methods of linearity measurement
<b>IEC 61215</b> 1993-04-00	Crystalline silicon terrestrial photovoltaic (PV) modules; design qualification and type approval
<b>IEC 61646</b> 1996-11-00	Thin-film terrestrial photovoltaic (PV) modules - Design qualification and type approval
<b>IEC 61702</b> 1995-03-00	Rating of direct coupled photovoltaic (PV) pumping systems
<b>IEC 61683</b> 1999-11-00	Photovoltaic systems - Power conditioners - Procedure for measuring efficiency
<b>IEC 61727</b> 1995-06-00	Photovoltaic (PV) systems - Characteristics of the utility interface
<b>IEC 60364-7-712</b> 2002-05-00	Electrical installations of buildings - Part 7-712: Requirements for special installations or locations; Solar photovoltaic (PV) power supply systems
<b>UL 1703</b> 2002-03-15	Flat-plate photovoltaic modules and panels
<b>EN 12975-1</b> 2000-10-00 <b>prEN 12975-1</b> 2004-05-00	Thermal solar systems and components - Solar collectors - Part 1: General requirements
<b>EN 12975-2</b> 2001-06-00 <b>prEN 12975-2</b> 2004-05-00	Thermal solar systems and components - Solar collectors - Part 2: Test methods



<b>EN 12975-2/AC</b> 2002-07-00	Thermal solar systems and components - Solar collectors - Part 2: Test methods; Amendment AC
<b>EN 12976-1</b> 2000-12-00 <b>prEN 12976-1</b> 2004-05-00	Thermal solar systems and components - Factory made systems - Part 1: General requirements .
<b>EN 12976-2</b> 2000-12-00 <b>prEN 12976-2</b> 2004-05-00	Thermal solar systems and components - Factory made systems - Part 2: Test methods
<b>ENV 12977-1</b> 2001-04-00	Thermal solar systems and components - Custom built systems - Part 1: General requirements
<b>ENV 12977-2</b> 2001-04-00	Thermal solar systems and components - Custom built systems - Part 2: Test methods
<b>ENV 12977-3</b> 2001-04-00	Thermal solar systems and components - Custom built systems - Part 3: Performance characterisation of stores for solar heating systems
<b>ISO 9806-1</b> 1994-12-00	Test methods for solar collectors - Part 1: Thermal performance of glazed liquid heating collectors including pressure drop
<b>ISO 9806-2</b> 1995-08-00	Test methods for solar collectors - Part 2: Qualification test procedures

### Internal Regulations

<b>QMA 2.572.01</b> 2002-10	Performance Measurement of solar cells
<b>QMA 2.572.02</b> 2004-04	Type testing of photovoltaic PV-modules in accordance with IEC 61215 / IEC 61646
<b>QMA 2.572.03</b> 2004-04	Type testing of PV-inverters
<b>QMA 2.572.04</b> 2004-04	Type testing of PV-pump systems
<b>QMA 2.572.07</b> 2001-03	Type testing of PV-supplied freezer and refrigeration appliances in
<b>QMA 2.572.08</b> 2004-04	Type testing of PV- generator terminal boxes
<b>QMA 2.572.09</b> 2004-04	Type testing regarding the electrical safety of PV- modules
<b>QMA 2.572.10</b> 2004-04	Individual acceptance test of grid-connected PV-systems
<b>QMA 2.572.11</b> 2004-04	Type testing of mounting systems
<b>QMA 2.572.12</b> 2004-04	Type testing of DC isolating points
<b>QMA 2.572.13</b> 2004-04	Type testing of partial discharge in insulation foils
<b>QMA 2.572.20</b> 2004-04	Type testing of PV- lighting systems (Performance)
<b>QMA 2.572.21</b> 2004-04	Type testing of PV- charge regulators in Solar-Home-Systems
<b>QMA 2.576.01</b> 2004-04	Type testing of solar thermal (ST) (water-) collectors in accordance with EN 12975 and ISO 9806



<b>QMA 2.576.02</b> 2004-04	Performance characterisation of storse for solar heating systems in accordance with TS 12977-3
<b>QMA 2.576.03</b> 2004-04	Type testing of factory made systems in accordance with EN 12976
<b>QMA 2.576.04</b> 2004-04	Type testing of custom built systems in accordance with ENV 12977

## 2. Elektrische Geräte und Komponenten

### International Standards

<b>EN 50178</b> 1997-10-00	Electronic equipment for use in power installations
<b>IEC 60146-1-1</b> 1991-03-00 <b>AMD 1</b> 1996-07-00	Semiconductor convertors; general requirements and line commutated convertors; part 1-1: specifications of basic requirements
<b>IEC 60146-2</b> 1999-11-00	Semiconductor converters - Part 2: Self-commutated semiconductor converters including direct d.c. converters
<b>IEC 60270</b> 2000-12-00 <b>Corrigendum 1</b> 2001-10-00	High-voltage test techniques - Partial discharge measurements
<b>IEC 60664-1</b>	Isolation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests
<b>IEC 60901</b> 1996-02-00 <b>AMD 1</b> 1997-06-00 <b>AMD 2</b> 2000-04-00	Single-capped fluorescent lamps - Performance specifications
<b>IEC 60921</b> 1988-00-00 <b>Corrigendum 1</b> 1989-04-00 <b>AMD 1</b> 1990-11-00 <b>AMD 2</b> 1994-06-00	Ballasts for tubular fluorescent lamps - Performance requirements
<b>IEC 61347-1</b> 2000-10-00 <b>AMD 1</b> 2003-09-00	Lamp controlgear - Part 1: General and safety requirements
<b>IEC 61347-2-4</b> 2000-10-00	Lamp controlgear - Part 2-4: Particular requirements for d.c. supplied electronic ballasts for general lighting
<b>IEC 60925</b> 1989-03-00	D.c. supplied electronic ballasts for tubular fluorescent lamps; performance requirements
<b>IEC/TR 61800-6</b> 2003-03-00	Adjustable speed electrical power drive systems - Part 6: Guide for determination of types of load duty and corresponding current ratings



## DIN Standards

<b>DIN VDE 0100-410</b> 1997-01-00 <b>A1</b> 2003-06-00	Erection of power installations with nominal voltages up to 1000 V - Part 4: Protection for safety; Chapter 41: Protection against electric shock (IEC 60364-4-41:1992, modified); German version HD 384.4.41 S2:1996
<b>DIN EN 61140</b> 2003-08-00	Protection against electric shock - Common aspects for installation and equipment
<b>DIN VDE 0110-1</b> 1997-04-00	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests (IEC 60664-1:1992, modified); German version HD 625.1 S1:1996
<b>DIN VDE 0126</b> 1999-04-00	Automatic disconnecting facility for photovoltaic installations with a rated output <kleiner => 4,6 kVA and a single-phase parallel feed by means of an inverter into the public low-voltage mains
<b>DIN EN ISO 9906</b> 2002-08-00	Rotodynamic pumps - Hydraulic performance acceptance test - Grades 1 and 2 (ISO 9906:1999); German version EN ISO 9906:1999

## Others

<b>VDEW-Regulation</b> 2001 (4 <sup>th</sup> edition)	Technical Directive – Directive for the parallel operation of in-plant generation systems with the low voltage grid of the electricity supply utilities (EVU)
<b>WHO-Test Specification E3/RF4</b> 1989-07	Equipment performance specification for refrigerators and freezers
<b>WHO-Test Specification E3/PROC/7</b> 1989-07	Solar (PV) refrigerator and Icepack freezers

## 3. Umweltsimulation

<b>IEC 60068-2-1</b> 1990-04-00 <b>AMD 1</b> 1993-02-00 <b>AMD 2</b> 1994-05-00	Environmental testing; part 2: tests; tests A: cold
<b>IEC 60068-2-2</b> 1974-00-00 <b>AMD 1</b> 1993-01-00 <b>AMD 2</b> 1994-05-00	Basic environmental testing procedures. Part 2 : Tests. Test B: Dry heat
<b>IEC 60068-2-78</b> 2001-08-00	Environmental testing - Part 2-78: Tests; Test Cab: Damp heat, steady state
<b>IEC 60068-2-6</b> 1995-03-00	Environmental testing - Part 2: Tests - Test Fc: Vibration (sinusoidal)
<b>IEC 60068-2-21</b> 1999-01-00	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices
<b>IEC 60068-2-27</b> 1987-00-00	Environmental testing. Part 2: Tests. Test Ea and guidance: Shock



<b>IEC 60068-2-30</b> 1980-00-00 <b>AMD 1</b> 1985-00-00	Basic environmental testing procedures. Part 2 : Tests. Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)
<b>IEC 60068-2-33</b> 1971-00-00 <b>AMD 1</b> 1978-00-00	Basic environmental testing procedures. Part 2 : Tests. Guidance on change of temperature tests
<b>IEC 60068-2-75</b> 1997-08-00	Environmental testing - Part 2: Tests - Test Eh: Hammer tests
<b>IEC 61345</b> 1998-02-00	UV test for photovoltaic (PV) modules
<b>IEC 61721</b> 1995-03-00	Susceptibility of a photovoltaic (PV) module to accidental impact damage (resistance to impact test)

**Verwendete Abkürzungen:**

AMD	Amendment
EN	Europäische Norm
DIN	Deutsches Institut für Normung e.V.
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
VDE	Verband der Elektrotechnik, Elektronik, Informationstechnik e.V.
VDEW	Verband der Elektrizitätswirtschaft e.V.
WHO	World Health Organisation

**Für alle vorstehend aufgeführten Prüfgebiete sind prüfberichtszeichnungs berechtigt:**

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