Say yes to solar power!
Because it protects the climate.

Innovations from a photovoltaic pioneer

As a solar specialist with 50 years’ experience in photovoltaics (PV), Sharp makes significant contributions to groundbreaking progress in solar technology.

Sharp photovoltaic modules in the NU series are designed for applications with high power requirements. These quality monocrystalline modules produce a continuous, reliable yield, even under demanding operational conditions.

All Sharp NU series modules offer system integration which is optimal both technically and economically, and are suitable for installations in on and off-grid PV systems.

Product features

- High-performance photovoltaic modules made of monocrystalline (156.5 mm$^2$) silicon solar cells with module efficiencies of up to 14.1%.
- Bypass diodes which minimise the loss in output when shading occurs.
- Textured cell surface for particularly high electricity yields.
- BSF structure (Back Surface Field) to optimise cell efficiency.
- Use of tempered white glass, EVA plastic, and weather protection film, as well as an anodised aluminium frame with drainage holes for long-term use.
- Output: connection cable with waterproof plug connector.

Quality from Sharp

Benchmarks are set by the quality standards of Sharp Solar. Continual checks guarantee a consistently high level of quality. Every module undergoes visual, mechanical, and electrical inspection. This is recognisable by means of the original Sharp label, the serial number, and the Sharp guarantee:

- 5 year product guarantee
- 10 year performance guarantee for a power output of 90%
- 25 year performance guarantee for a power output of 80%

The detailed guarantee conditions and additional information can be found at www.sharp.eu.

Brief details for the installer

- 156.5 mm × 156.5 mm monocrystalline solar cells
- 48 cells in series
- 2,400 N/m$^2$ mechanical load-bearing capacity (245 kg/m$^2$)
- 1,000 V DC maximum system voltage
- IEC/EN 61215, IEC/EN 61730, Class II (VDE: 40021391)
**Mechanical data**

- **Cell**: Monocrystalline (156.5 mm$^2$) silicon solar cells
- **Quantity and wiring of cells**: 48 in series
- **Dimensions**: 1,318 × 994 × 46 mm (1.31 m$^3$)
- **Weight**: 16 kg
- **Connection type**: Cable with plug connector (MC-3)

**Electrical data**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>NU-185 (E1)</th>
<th>NU-180 (E1)</th>
<th>NU-55 (E3E)</th>
<th>NU-50 (E3E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum power ($P_{max}$)</td>
<td>185 Wp</td>
<td>180 Wp</td>
<td>55 Wp</td>
<td>50 Wp</td>
</tr>
<tr>
<td>Open-circuit voltage ($V_{oc}$)</td>
<td>30.2</td>
<td>30.0</td>
<td>8.37</td>
<td>8.00</td>
</tr>
<tr>
<td>Short-circuit current ($I_{sc}$)</td>
<td>8.54</td>
<td>8.37</td>
<td>7.60</td>
<td>7.37</td>
</tr>
<tr>
<td>Voltage at point of maximum power ($V_{mp}$)</td>
<td>24.0</td>
<td>23.7</td>
<td>10.2</td>
<td>9.90</td>
</tr>
<tr>
<td>Current at point of maximum power ($I_{mp}$)</td>
<td>7.11</td>
<td>7.60</td>
<td>6.00</td>
<td>5.60</td>
</tr>
<tr>
<td>Module efficiency ($\eta_m$)</td>
<td>14.1</td>
<td>13.7</td>
<td>10.3</td>
<td>10.0</td>
</tr>
<tr>
<td>NOCT</td>
<td>47.5</td>
<td>47.5</td>
<td>(-0.485)</td>
<td>(-0.485)</td>
</tr>
<tr>
<td>Temperature coefficient – open-circuit voltage ($\alpha_{V_{oc}}$)</td>
<td>(-104)</td>
<td>(-104)</td>
<td>(-0.53)</td>
<td>(-0.53)</td>
</tr>
<tr>
<td>Temperature coefficient – short-circuit current ($\alpha_{I_{sc}}$)</td>
<td>+0.053</td>
<td>+0.053</td>
<td>(-0.485)</td>
<td>(-0.485)</td>
</tr>
<tr>
<td>Temperature coefficient – power ($\alpha_{P_{max}}$)</td>
<td>(-0.485)</td>
<td>(-0.485)</td>
<td>(-0.485)</td>
<td>(-0.485)</td>
</tr>
</tbody>
</table>

The electrical data applies under standard test conditions (STCs): irradiation 1,000 W/m$^2$ with light spectrum AM 1.5 and a cell temperature of 25 °C. The rated electrical characteristics are subject to a manufacturing tolerance of –5% / +10%. NOCT conditions: irradiation of 800 W/m$^2$, ambient temperature of 20 °C and wind speed of 1 m/sec.

**Characteristic curves NU-180 (E1)**

- Characteristic curves: current/ power vs. voltage
- Characteristic curves: open-circuit voltage / short-circuit current vs. irradiation

**Applications**

- On-grid PV systems
- Off-grid PV systems
- On-roof PV systems
- Ground-mounted PV systems

Please read our detailed installation manual carefully before installing the photovoltaic modules.

**Limit values**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature (cell)</td>
<td>– 40 to + 90 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>– 40 to + 90 °C</td>
</tr>
<tr>
<td>Storage air humidity (relative)</td>
<td>up to 90 %</td>
</tr>
<tr>
<td>Maximum system voltage</td>
<td>1,000 V DC</td>
</tr>
<tr>
<td>Maximum mechanical load</td>
<td>2,400 N/m$^3$</td>
</tr>
<tr>
<td>Over-current protection</td>
<td>15 A</td>
</tr>
</tbody>
</table>

**Exterior dimensions**

- **Rear view**
- **Cross-section A-A’**
- **Cross-section B-B’**
- **Cross-section C-C’**

**Note**

Technical data is subject to change without prior notice. Before using Sharp products, please request the latest data sheets from Sharp. Sharp accepts no responsibility for damage to devices which have been equipped with Sharp products on the basis of unverified information. The specifications may deviate slightly and are not guaranteed. Installation and operating instructions are to be found in the corresponding handbooks, or can be downloaded from www.sharp.eu.

This module should not be directly connected to a load.

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The reference image on the front page shows a 12.6 kWp system of Osmer-Solartechnik in Grasberg, Germany.

**Sharp Energy Solution Europe**

Sharp Energy Solution Europe (SESE) is a division of Sharp Electronics (Europe) GmbH. SESE operates in Central & Eastern Europe, covering Austria, Benelux, Central & Eastern Europe, Denmark, France, Germany, Scandinavia, Spain & Portugal, Switzerland, and the United Kingdom. SESE provides photovoltaic modules and related products for renewable energy solutions. For more information, visit the official website at www.sharp.eu.