

Sharp is a pioneer in photovoltaics /This is Why Sharp solar modules have set standards for over 50 years.



### Innovations from a photovoltaic pioneer

As a solar specialist with more than 50 years' experience in photovoltaics (PV), Sharp makes significant contributions to groundbreaking progress in solar technology. The NAE series of thin-film photovoltaic modules consists of an amorphous and a microcrystalline silicon layer. This microamorphous tandem structure not only absorbs visible light but also the invisible portion of the solar spectrum. This makes especially efficient use of solar energy. All module types of the Sharp NA Series offer optimum system integration, in terms of both technology and economy, and are suitable for installations in grid-connected PV systems.

### Product features

- Tandem structure with an amorphous and a microcrystalline silicon layer offering a stabilised module efficiency of up to 9.6%
- Two glass layers laminated with a high performing vapor barrier encapsulant
- Aesthetic design for many applications
- Low temperature coefficients enabling higher energy yields per watt at high temperatures
- Less dirt accumulation due to frameless design
- Installation in landscape or portrait mode
- One bypass diode integrated in the junction box
- No Cadmium – RoHS compliant
- Made in Italy

### Quality from Sharp

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:

- 10-year product guarantee
- 10-year guarantee on 90% of the minimum power output
- 25-year guarantee on 80% of the minimum power output

End users are required to register the modules with Sharp in order for the product and power output guarantee to be effective. The registration documents will be handed out by the installer or supplied directly by Sharp.

### Certificates and approvals

All modules are tested and certified according to

- IEC/EN 61646 and IEC/EN 61730, Application class A
- Safety class II
- CE

Sharp is certified based on

- ISO 9001:2008 and ISO 14001:2004



AWARDS FOR BRAND AWARENESS,  
BRAND EVALUATION, INSTALLERS'  
CHOICE AND DISTRIBUTION.

## ELECTRICAL DATA (AT STC)

|                                   |           | Nominal values |           |           |           |           | Initial values |           |           |           |           |       |
|-----------------------------------|-----------|----------------|-----------|-----------|-----------|-----------|----------------|-----------|-----------|-----------|-----------|-------|
|                                   |           | NA-E135G5      | NA-E130G5 | NA-E125G5 | NA-E120G5 | NA-E115G5 | NA-E135G5      | NA-E130G5 | NA-E125G5 | NA-E120G5 | NA-E115G5 |       |
| Maximum power                     | $P_{max}$ | 135            | 130       | 125       | 120       | 115       | 155.2          | 149.5     | 143.7     | 138.0     | 132.2     | $W_p$ |
| Open-circuit voltage              | $V_{OC}$  | 61.3           | 60.4      | 59.7      | 59.1      | 58.6      | 61.8           | 61.1      | 60.4      | 59.7      | 59.0      | V     |
| Short-circuit current             | $I_{SC}$  | 3.41           | 3.41      | 3.37      | 3.33      | 3.26      | 3.51           | 3.47      | 3.43      | 3.39      | 3.35      | A     |
| Voltage at point of maximum power | $V_{mpp}$ | 47.0           | 46.1      | 45.5      | 44.9      | 44.5      | 49.3           | 48.7      | 48.3      | 47.8      | 47.3      | V     |
| Current at point of maximum power | $I_{mpp}$ | 2.88           | 2.82      | 2.75      | 2.68      | 2.59      | 3.15           | 3.07      | 2.98      | 2.89      | 2.80      | A     |
| Module efficiency                 | $\eta_m$  | 9.6            | 9.3       | 8.9       | 8.6       | 8.2       |                |           |           |           |           | %     |

STC = Standard Test Conditions: irradiance 1,000 W/m<sup>2</sup>, AM 1.5, cell temperature 25 °C. Rated electrical characteristics of  $I_{SC}$  and  $V_{OC}$  are within  $\pm 10\%$  of the indicated values and  $+7/-2\%$  of  $P_{max}$ . The initial values are approx. 15% higher than the nominal (stabilised) values and will decline within the first weeks of operation. Afterwards the power output will stabilize around the nominal value according to the seasonal changes.

## ELECTRICAL DATA (AT NOCT)

|                                    |           | NA-E135G5 | NA-E130G5 | NA-E125G5 | NA-E120G5 | NA-E115G5 |       |
|------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-------|
| Maximum power                      | $P_{max}$ | 102.4     | 98.6      | 94.8      | 90.6      | 86.8      | $W_p$ |
| Open-circuit voltage               | $V_{OC}$  | 56.8      | 55.9      | 55.3      | 54.7      | 54.2      | V     |
| Short-circuit current              | $I_{SC}$  | 2.76      | 2.76      | 2.73      | 2.70      | 2.65      | A     |
| Voltage at point of maximum power  | $V_{mpp}$ | 44.0      | 43.2      | 42.6      | 41.8      | 41.5      | V     |
| Current at point of maximum power  | $I_{mpp}$ | 2.33      | 2.29      | 2.23      | 2.17      | 2.10      | A     |
| Nominal operating cell temperature | NOCT      | 46        | 46        | 46        | 46        | 46        | °C    |

NOCT: Module operating temperature at 800 W/m<sup>2</sup> irradiance, air temperature of 20 °C, wind speed of 1 m/s.

## LIMIT VALUES

|                         |                        |
|-------------------------|------------------------|
| Maximum system voltage  | 1,000 V DC             |
| Over-current protection | 5 A                    |
| Temperature range       | -40 to +90 °C          |
| Maximum mechanical load | 2,400 N/m <sup>2</sup> |

## MECHANICAL DATA

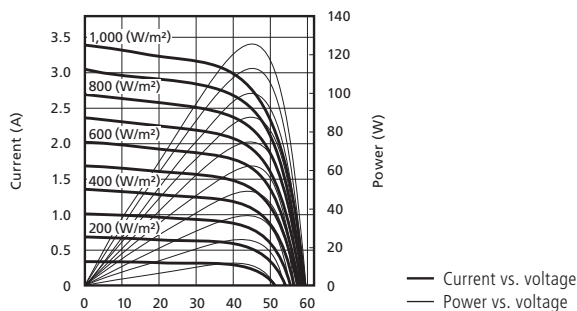
|  |          |
|--|----------|
| Length                                 | 1,402 mm |
| Width                                  | 1,001 mm |
| Depth (including junction box = 24 mm) | 7.4 mm   |
| Weight                                 | 26 kg    |

## TEMPERATURE COEFFICIENT

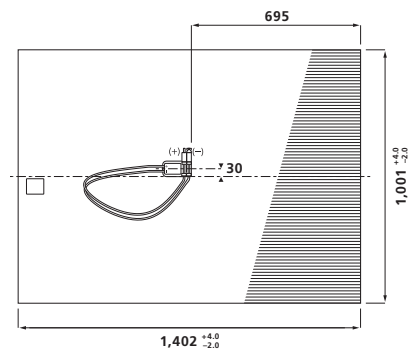
|           |              |
|-----------|--------------|
| $P_{max}$ | -0.24 % / °C |
| $V_{OC}$  | -0.30 % / °C |
| $I_{SC}$  | +0.07 % / °C |

## CHARACTERISTIC CURVES NA-E125G5

Characteristic curves: current/power vs. voltage (cell temperature: 25 °C)



## REAR VIEW



## GENERAL DATA

|                          |  |
|--------------------------|--|
| Cells                    | Tandem cell of amorphous ( $\alpha$ -Si) and microcrystalline ( $\mu$ c-Si) silicon  |
| Front glass   rear glass | low iron non tempered glass   tempered glass   |
| Connection box           | PPE/PPO resin, IP65-rating, 1 bypass diode included  |
| Cable                    | 2.5 mm <sup>2</sup> , length 950 mm  |
| Connector                | SMK (Type CCT9901-2352F/2462F), IP67 rating<br>To extend the module connection leads, only use SMK connector under the same series or MultiContactAG MC4 connector (PV-KST04/PV-KBT04) |

## NOTE

Please read our detailed installation manual carefully before installing the photovoltaic modules. The instructions in the installation manual must always be observed (e.g. minus pole must be grounded, protection with blocking diodes/fuses).

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**SHARP**

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The reference image on the front page shows a 340 kWp system in Eastern Germany. **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/solar](http://www.sharp.eu/solar). This module should not be directly connected to a load.