



## 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.

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



### Brief details for the installer

- Tandem structure consisting of an amorphous and a microcrystalline silicon layer
- 96 cells
- 2,400 N/m<sup>2</sup> mechanical load-bearing capacity (245 kg/m<sup>2</sup>)
- 1,000 V DC maximum system voltage
- IEC/EN 61646, IEC/EN 61730, Class II (VDE: 40023069)

### Product features

- Tandem structure with an amorphous and a microcrystalline silicon layer offering a stabilised module efficiency of up to 9.0%.
- The black appearance of the module creates a harmonious visual impression.
- Higher energy yields per watt, at both high temperatures and with diffuse light.
- 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](http://www.sharp.eu).

- End users are required to register the modules with Sharp in order for the product and service warranty to be effective. The registration documents will be handed out by the installation staff or supplied directly by Sharp.

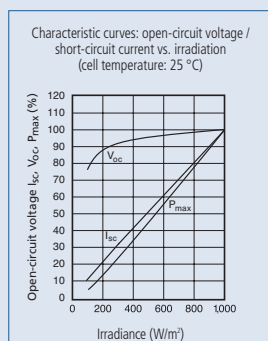
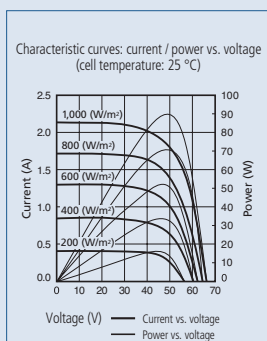
Mechanical data	
Cell	Tandem cell of amorphous (α-Si) and microcrystalline (μc-Si) silicon
Connection	2 sub-modules in parallel
Dimensions	1,129 × 934 × 46 mm (1.05 m <sup>2</sup> )
Weight	18 kg
Connection type	Cable with plug connector (MC-3)
Bypass diodes	1

Limit values		
Storage air humidity (relative)	up to 90	%
Operating temperature (cell)	- 40 to +90	°C
Storage temperature	- 40 to +90	°C
Maximum system voltage	1,000	V DC
Maximum mechanical load	2,400	N/m <sup>2</sup>
Over-current protection	4	A

		Initial values		Nominal values		
		NA-F095 (B5)	NA-F090 (B5)	NA-F095 (B5)	NA-F090 (B5)	
Maximum power	P <sub>max</sub>	111.8 W <sub>p</sub>	105.9 W <sub>p</sub>	95 W <sub>p</sub>	90 W <sub>p</sub>	
Open-circuit voltage	V <sub>OC</sub>	64.8	63.8	63.8	62.8	V
Short-circuit current	I <sub>SC</sub>	2.43	2.42	2.37	2.34	A
Voltage at point of maximum power	V <sub>mpp</sub>	52.0	50.5	47.5	47.7	V
Current at point of maximum power	I <sub>mpp</sub>	2.15	2.10	2.00	1.89	A
Module efficiency	η <sub>m</sub>			9.0	8.5	%
NOCT				44	44	°C
Temperature coefficient – open-circuit voltage	αV <sub>OC</sub>	- 0.30	- 0.30	- 0.30	- 0.30	% / °C
Temperature coefficient – short-circuit current	αI <sub>SC</sub>	+0.070	+0.070	+0.070	+0.070	% / °C
Temperature coefficient – power	αP <sub>max</sub>	- 0.24	- 0.24	- 0.24	- 0.24	% / °C

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

### Characteristic curves NA-F090 (B5)



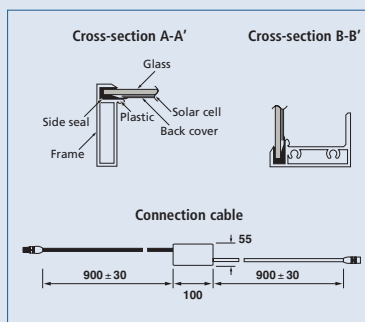
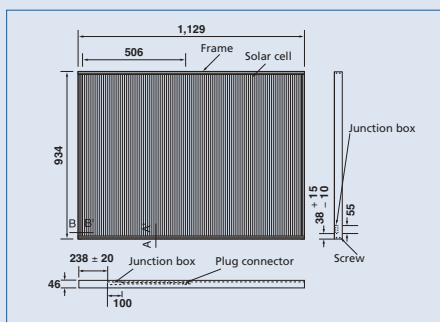
### Applications

- 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. The instructions in the installation manual must always be observed (e.g. max. of 12 modules in series, minus pole must be grounded, protection with blocking diodes/fuses).

A generator box with approved blocking diodes is available from your Sharp dealer.

### Exterior dimensions



### 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](http://www.sharp.eu).

This module should not be directly connected to a load.

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