

## ND-F220A1

Poly-Crystalline Silicon  
Photovoltaic Module  
with 220 W Maximum Power

### GENERAL DESCRIPTION

SHARP's ND-F220A1 photovoltaic module is designed for large electrical power requirements. Based on the technology of crystal silicon solar cells cultivated for over 50 years, this module has super durability to withstand rigorous operating conditions and is suitable for all solar systems.

### FEATURES

- 1** High-power module (220W) using 6 inch poly crystalline silicon solar cells with 13.4% module conversion efficiency.
- 2** Photovoltaic module with bypass diode minimizes the power drop caused by shade. Textured cell surface to reduce the reflection of sunlight BSF (Back Surface Field) structure
- 3** Using white tempered glass, EVA resin, and a weatherproof film along with an aluminium frame for extended outdoor use
- 4** Output terminal: Lead wire with waterproof connector
- 5** Qualified IEC 61215, and 61730

## SPECIFICATIONS

Cell	Poly-crystalline silicon solar cells 6 inch
No. of cells and connections	60 in series
Application	High voltage system
Maximum system voltage	DC 1000V
Series fuse	15A
Maximum power	220 W
Dimensions	1652 x 994 x 46mm
Weight	20kg

## ABSOLUTE MAXIMUM RATINGS

Parameters	Rating	Unit
Operating temperature	-40 to +90	°C
Storage temperature	-40 to +90	°C

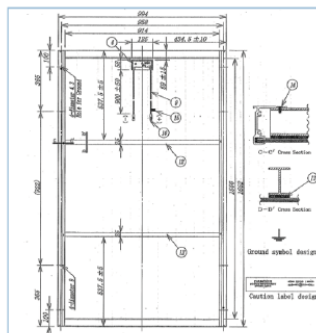
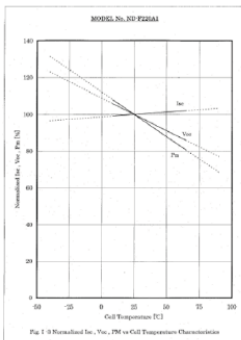
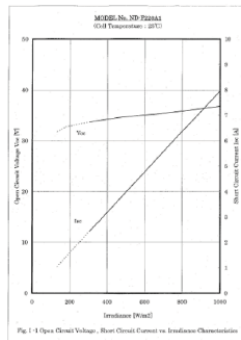
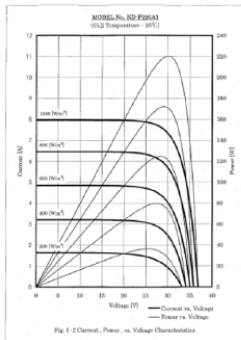
## OUTPUT TERMINAL

Type of output terminal	Lead wire with connector
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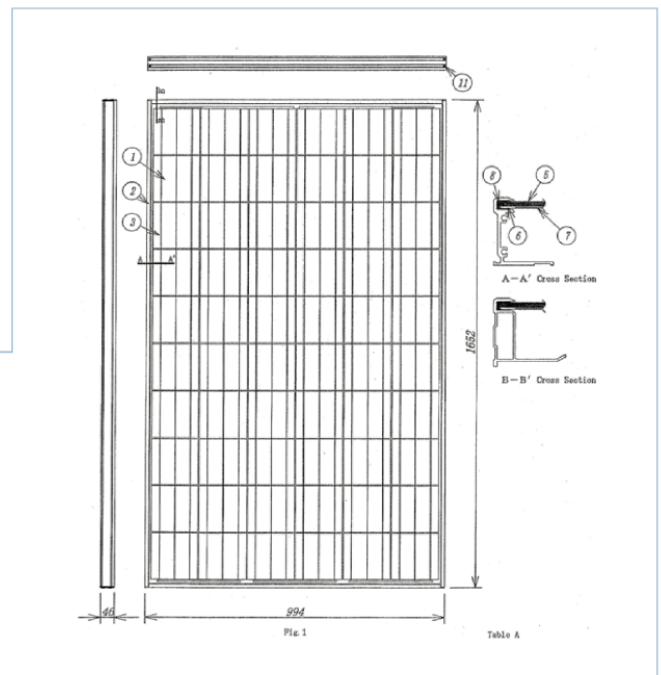
## ELECTRO-OPTICAL CHARACTERISTICS

Model	ND-F220A1			
Parameters	Symbol	Typ.	Unit	Condition
Open circuit voltage	Voc	36.8	V	Standard test condition (STC) :Irradiance 1000 W/m <sup>2</sup> :AM1.5 :Cell temperature 25°C
Maximum power voltage	V <sub>pm</sub>	30.2	V	
Short circuit current	I <sub>sc</sub>	7.96	A	
Maximum power current	I <sub>pm</sub>	7.29	A	
Maximum power	P <sub>m</sub>	220	W	
Module efficiency	η <sub>m</sub>	13.4	%	
NOCT coefficient		47.5	°C	
Temperature coefficient of voc	α <sub>VOC</sub>	-0.130	V/°C	
Temperature coefficient of isc	α <sub>I<sub>SC</sub></sub>	+0.053	%/°C	
Temperature coefficient of pmax	α <sub>P<sub>max</sub></sub>	-0.485	%/°C	

## CHARACTERISTICS



## OUTLINE DIMENSIONS



In the absence of confirmation by specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP products shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest specification sheets before using any SHARP products.

• Specifications are subject to change without notice.

## APPLICATIONS

- Grid connected residential systems
- Office buildings
- Solar villages
- Villas, mountain cottages
- Lighting equipment
- Traffic signs
- Radio relay stations
- Telemeter systems
- Telecommunication systems
- Beacons
- Pumps
- Solar power stations