

# SHARP

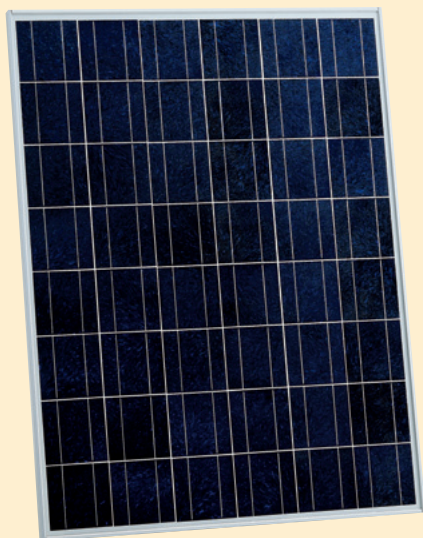
**NDQ2E3E / ND162E1**  
**162 W**

Photovoltaic module polycrystalline



## POLYCRYSTALLINE SILICON PHOTOVOLTAIC MODULE WITH 162 W NOMINAL POWER

Sharp's NDQ2E3E / ND162E1 photovoltaic module is designed for large electrical power requirements. Based on the technology of crystal silicon solar cells cultivated for over 40 years, this module has superb durability to withstand rigorous operating conditions and is suitable for grid connected systems.



### Features

- High-power module (162 W) using 155.5 mm square polycrystalline silicon solar cells with 12.4 % module conversion efficiency.
- Photovoltaic module with bypass diode minimises the power drop caused by shade. Anti reflection coating and BSF (Back Surface Field) structure to improve cell conversion efficiency.
- Using white tempered glass, EVA resin, and a weather-proof film along with an aluminium frame for extended outdoor use.
- Output terminal: Lead wire with waterproof connector.
- NDQ2E3E: manufactured in Japan  
ND162E1: manufactured in UK  
Apart from the place of manufacture the models are identical in construction.
- Hail damage resistance tested by TÜV in accordance with IEC61215.

## Specifications NDQ2E3E / ND162E1

|                              |                                                         |
|------------------------------|---------------------------------------------------------|
| Cell                         | Polycrystalline silicon solar cells,<br>155.5 mm square |
| No. of cells and connections | 48 in series                                            |
| Maximum system voltage       | 1,000 V DC                                              |
| Nominal power                | 162 W                                                   |
| Dimensions                   | 1,318 x 994 x 46 mm                                     |
| Weight                       | 16.0 kg                                                 |
| Type of output terminal      | Lead wire with connector                                |

## Ambient conditions

| Parameters            | Rating     | Unit |
|-----------------------|------------|------|
| Operating temperature | -40 to +90 | °C   |
| Storage temperature   | -40 to +90 | °C   |
| Storage humidity      | up to 90   | %    |

## Temperature coefficients

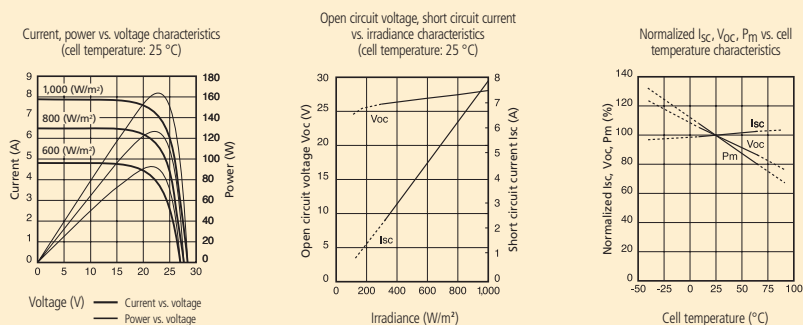
|                 |               |
|-----------------|---------------|
| $\alpha P_m$    | -0.485 % / °C |
| $\alpha I_{sc}$ | +0.053 % / °C |
| $\alpha V_{oc}$ | -104 mV / °C  |

## Electrical data

| Parameters            | Symbol   | Min.  | Typ.  | Unit |
|-----------------------|----------|-------|-------|------|
| Open circuit voltage  | $V_{oc}$ | —     | 28.4  | V    |
| Maximum power voltage | $V_{pm}$ | —     | 22.8  | V    |
| Short circuit current | $I_{sc}$ | —     | 7.92  | A    |
| Maximum power current | $I_{pm}$ | —     | 7.11  | A    |
| Nominal power         | $P_m$    | 153.9 | 162.0 | W    |
| Module efficiency     | $\eta_m$ | —     | 12.4  | %    |

The electrical data applies under Standard Test Conditions (STC): Radiation 1,000 W/m<sup>2</sup> with a spectrum of AM 1.5 and at a cell temperature of 25 °C.

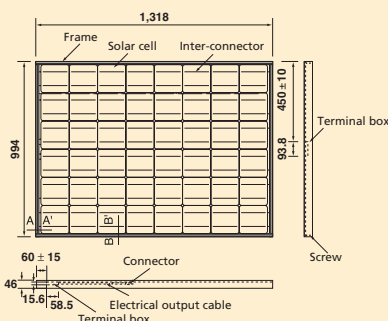
## Characteristics



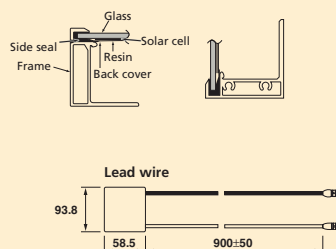
## Application options

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

## Outline dimensions



A-A' Cross section B-B' Cross section



This module should not be connected to any direct load.

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.

# SHARP

### Central & Eastern Europe

Tel: +43-(0)1-72 71 90 · Fax: +43-(0)1-72 71 91 41  
[www.sharp-cee.com](http://www.sharp-cee.com)

### France

Tel: +33-(0)1-49 90 34 00 · Fax: +33-(0)1-48 63 26 21  
[www.sharp.fr](http://www.sharp.fr)

### Germany & Austria

Tel. Germany: +49-(0) 18 05-01 52 22 (0,12 €/min.)  
 Tel. Austria: +49-(0) 8 20-40 06 40 (0,145 €/min.)  
[www.sharp.de/solar](http://www.sharp.de/solar) | [www.sharp.at/solar](http://www.sharp.at/solar)

### Italy

Tel: +39-02-89 59 51 · Fax: +39-02-89 53 08 95  
[www.sharp.it](http://www.sharp.it)

### Spain & Portugal

Tel: +34-(0)93-5 81 97 00 · Fax: +34-(0)93-6 75 46 11  
[www.sharp.es](http://www.sharp.es)

### Nordic countries

Tel: +46-(0)8-6 34 36 00 · Fax: +46-(0)8-6 34 36 10  
[www.sharp.se](http://www.sharp.se)

### Switzerland

Tel: +41-(0)1-8 46 61 11 · Fax: +41-(0)1-8 46 62 25  
[www.sharp.ch](http://www.sharp.ch)

### Benelux

Tel: +31-(0)30-6 35 95 00 · Fax: +31-(0)30-6 35 95 95  
[www.sharp.nl](http://www.sharp.nl) | [www.sharp.be](http://www.sharp.be)

### United Kingdom

Tel: +44-(0)1 61-2 05 23 33 · Fax: +44-(0)1 61-2 05 70 76  
[www.sharp.co.uk/solar](http://www.sharp.co.uk/solar)