Meridian
energy systems, inc.

PVWatts

Energy & Cost Savings

The Friends Meeting of Austin
3701 Martin Luther King Blvd. Austin, TX. 78721
(20) Sharp 208 W Modules = 4.16 kW
0.77/0.94*0.945=0.774 Derate Factor

Station Identification	
City:	Austin
State:	TX
Latitude:	30.30° N
Longitude:	97.70° W
Elevation:	189 m
PV System Specifications	
DC Rating:	4.16 kW
DC to AC Derate Factor:	0.774
AC Rating:	3.22 kW
Array Type:	Fixed Tilt
Array Tilt:	18.5°
Array Azimuth:	175.0°
Energy Specifications	
Cost of Electricity:	10.5 ¢/kWh

Results

Month	Solar Radiation (kWh/m^2/day)	AC Energy (kWh)	Energy Value ($)
1	3.92	375	39.38
2	4.66	396	41.58
3	5.34	499	52.40
4	5.62	494	51.87
5	5.82	519	54.50
6	6.35	540	56.70
7	6.60	570	59.85
8	6.41	557	58.48
9	5.70	492	51.66
10	5.33	479	50.30
11	4.20	374	39.27
12	3.56	338	35.49
Year	5.30	5633	591.47

C# Has not yet had site assessment.
May 31, 2007

SHARP®

MULTI-PURPOSE MODULE

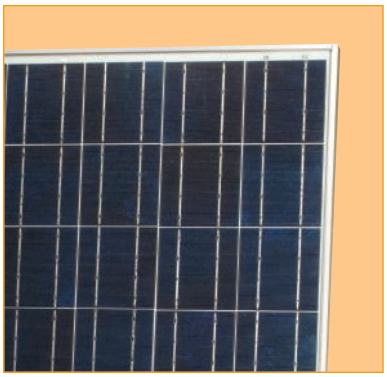
ND-208U1F

208 WATT

NEXT GENERATION. BREAKTHROUGH PERFORMANCE.

POLY-CRYSTALLINE SILICON PHOTOVOLTAIC MODULE WITH 208W MAXIMUM POWER

This poly-crystalline 208 watt module features 12.8% module efficiency for an outstanding balance of size and weight to power and performance. Using breakthrough technology perfected by Sharp's 45 years of research and development, these modules incorporate an advanced surface texturing process to increase light absorption and improve efficiency. Common applications include commercial and residential grid-tied roof systems as well as ground-mounted arrays. Designed to withstand rigorous operating conditions, Sharp's ND-208U1F modules offer high power output per square foot of solar array.



Solder-coated grid results in high fill factor performance under low light conditions.

Sharp multi-purpose modules offer outstanding performance for a variety of applications.

FEATURES

- **High-power module (208W) using 156mm square poly-crystalline silicon solar cells with 12.8% module conversion efficiency**
- **Sharp's advanced surface texturing process increases light absorption and efficiency while providing a more subdued, "natural" look**
- **Bypass diodes minimize the power drop caused by shade**
- **Water white tempered glass, EVA resin, and a weatherproof film, plus aluminum frame for extended outdoor use**
- **UL Listings: UL1703, cUL**
- **Sharp modules are manufactured in ISO 9001 certified facilities**
- **25-year limited warranty on power output (see dealer for details)**

ND-208U1F

MULTI-PURPOSE MODULE

208 WATT

ELECTRICAL CHARACTERISTICS

Cell	Poly-crystalline silicon
No. of Cells and Connections	60 in series
Open Circuit Voltage (Voc)*	36.3V
Maximum Power Voltage (Vpm)*	28.71V
Short Circuit Current (Isc)	7.99A
Maximum Power Current (Ipm)	7.25A
Rated Power (Pmax)*	208W (+10% / -5%)
Module Efficiency Maximum Power (η_m)	12.8%
Maximum System Voltage	600VDC
Series Fuse Rating	15A
Type of Output Terminal	Lead Wire with MC Connector

* (STC) Standard Test Conditions: 25°C, 1 kW/m², AM 1.5

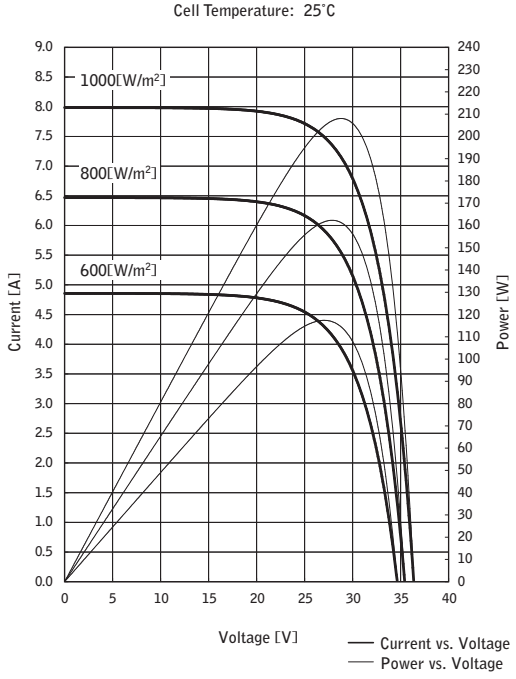
MECHANICAL CHARACTERISTICS

Dimensions A x B x C (below)	64.6" x 39.1" x 1.8" / 1640 x 994 x 46mm
Weight	46.3lbs / 21kg
Size of Carton	68.3" x 43.2" x 4.5" / 1735 x 1097 x 114mm
Carton Quantity	2 pcs per carton
Pallet Quantity	28 pcs per pallet
Loading Capacity (48 ft container)	448 pcs (16 pallets)
Loading Capacity (53 ft container)	476 pcs (17 pallets)

ABSOLUTE MAXIMUM RATINGS

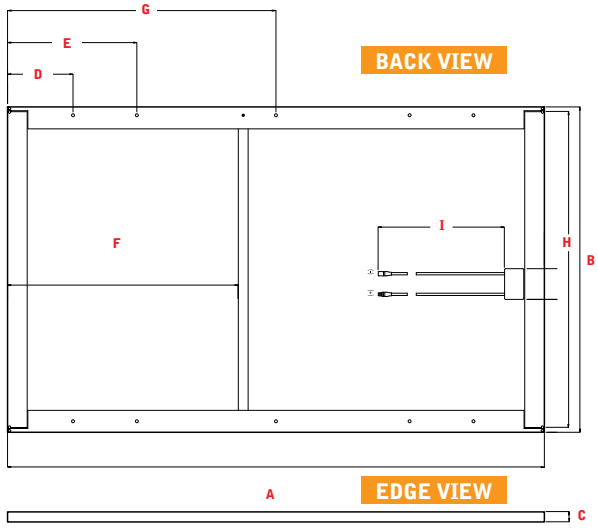
Operating Temperature (min to max, °F/°C)	-40 to +194°F / -40 to +90°C
Storage Temperature (min to max, °F/°C)	-40 to +194°F / -40 to +90°C

IV CURVES



Current, Power vs. Voltage Characteristics

DIMENSIONS



A	B	C	D
64.6"/1640m	39.1"/994mm	1.8"/46mm	7.87"/200mm

E	F	G	H	I
15.55"/395mm	27.8"/705mm	32.3"/820mm	37.3"/943mm	51.2"/1300mm

Design and specifications are subject to change without notice.

Sharp takes no responsibility for any defects that may occur in equipment using any Sharp devices.
Contact Sharp to obtain the latest product manuals before using any Sharp device.

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SHARP

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Cover photo: Solar installation by Pacific Power Management, Auburn CA

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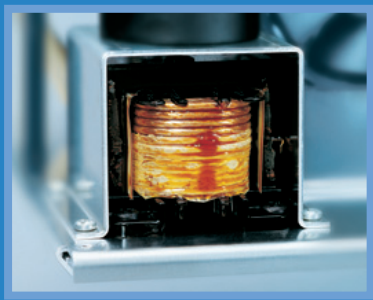

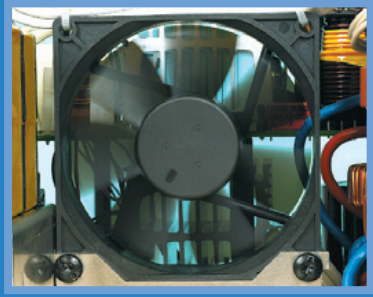

FRONIUS IG

GRID-TIED INVERTERS FOR PHOTOVOLTAIC SYSTEMS

Light Weight — At 26 lbs, the FRONIUS IG inverters are the lightest grid-connected inverters making them easy and cost effective to install.

Flexible — The wide voltage range of 150-500 V allows you to use different types of modules and system configuration possibilities.

Lower Cost — Integrated UL approved DC & AC disconnects which reduce installation time and complexity - often eliminating the need for additional disconnects.

LCD Display — User-friendly and comes standard with every FRONIUS IG; tracks more than 20 critical system performance parameters.

Plug-and-Play — Expansion slots in the inverter allow you to easily upgrade the inverter with data communication options.

Reliable — Fronius has been in business for over 60 years and has more than 200,000 FRONIUS IG inverters installed worldwide.

Warranty — 10 year Premium Warranty.

Fronius

POWERING YOUR FUTURE

FRONIUS IG

FRONIUS IG 2000 / 3000 / 2500-LV - Specifications

DC Input Data	FRONIUS IG 2000	FRONIUS IG 3000	FRONIUS IG 2500-LV
Recommended PV power	1500 – 2500 Wp	2500 – 3300 Wp	1800 – 3000 Wp
Max. DC input voltage	500 V	500 V	500 V
Operating DC voltage range	150 – 450 V	150 – 450 V	150 – 450 V
Max. usable DC input current	13.6 A	18 A	16.9 A
AC Output Data	**FRONIUS IG 2000**	**FRONIUS IG 3000**	**FRONIUS IG 2500-LV**
Maximum output power @40° C	2000 W	2700 W	2350 W
Nominal AC output voltage	240 V		208 V
Utility AC voltage range	212 – 264 V (240 V +10% / -12%)		183 - 227 V
Maximum AC current	8.35 A	11.25 A	11.25 A
Maximum utility back feed current	0.0 A	0.0 A	0.0 A
Operating frequency range	59.3 – 60.5 Hz (60 Hz nom)		
Total Harmonic Distortion THD	< 5%		
Power Factor (cos phi)	1		
General Data	**FRONIUS IG 2000**	**FRONIUS IG 3000**	**FRONIUS IG 2500-LV**
Max. efficiency	95.2%	95.2%	94.4%
Consumption in stand-by	< 0.15 W (night)		
Consumption during operation	7 W		
Enclosure	NEMA 3R		
Size (l x w x h)	18.5 x 16.5 x 8.8 inches (470 x 418 x 223 mm)		
Weight	26 lbs. (11.8 kg)		
Ambient temperature range	-5 to 122 °F (-20 to +50 °C)		
Cooling	controlled forced ventilaton		
Integrated AC and DC disconnects	standard UL approved DC & AC disconnects		
Protections			
Ground fault protection	Internal GFDI, in accordance with UL 1741		
DC reverse polarity protection	Internal diode		
Islanding protection	Internal, in accordance with UL 1741, IEEE 1547		
Over temperature	Output power derating		
Surge protection	Internal DC & AC protection, Tested to 6 kV		
Compliance			
Safety	UL 1741		
EMI	FCC Part 15; Class A & B		
Anti-Islanding protection	UL 1741, IEEE 1547		
Ground fault detector and interrupter	Compliant with NEC Art. 690 requirements, UL 1741		
Miscellaneous			
Maximum AC over current protection	Two-pole, 15 / 20 A circuit breaker		
AC wire sizing	Use maximum AWG 6 194°F (90 °C) copper wire		
DC wire sizing	Use maximum AWG 8 194°F (90 °C) copper wire		
AC disconnect	16 A		
DC disconnect	25 A		
Warranty	10 year Premium Warranty is Standard		

Distributed by

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