ES-C SERIES
photovoltaic panels

110, 115, 120 & 125 W

evergreensolar

MORE electricity

Our highly reliable ES-C series panels are designed to provide better battery charging capability for off-grid applications than our major competitors.

BETTER CHARGING CAPABILITY[1]
Higher voltages and temperature ratings to maintain charging under hot conditions.

INDEPENDENTLY VERIFIED POWER[2]
Four independent test labs regularly check panel power so you get the power we promise.

HIGH RANKINGS IN FIELD TESTS[3]
Long-term Photon and TÜV field tests prove Evergreen panels produce more electricity (kWh/kW).

GUARANTEED FOR LONGER[4]
5 year workmanship and
25 year power warranty.

LESS impact

String Ribbon™ panels have the smallest carbon footprint and fastest energy payback of any silicon-based solar panel ever made.

SMALLEST CARBON FOOTPRINT[5]
Our String Ribbon™ wafers are made with a fraction of the emissions that result from making conventional silicon panels.

12-MONTH ENERGY PAYBACK[5]
Our panels begin generating truly clean electricity faster than any other silicon-based panel on the market.

EFFICIENT, DURABLE PACKAGING
Designed for easy shipping in small or large quantities without the need for re-packaging.

LEAD-FREE SOLAR CELLS
Our panels make clean electricity but the way we make them is clean too.

1 – Maximum power voltage around 18V and temperature ratings over 90% based on PTC/STC; **2** – Power regularly calibrated by taking the straight average of test data from NREL, TÜV Rheinland PTL, TÜV Rheinland Cologne and Fraunhofer ISE; **3** - 2008 panel tests conducted by Photon and published in Photon International February 2009, TÜV Rheinland tests run from April to September 2008; **4** – For full details see the **Evergreen Solar Limited Warranty** available upon request or online.

5 Evaluation completed by the Energy Research Foundation of the Netherlands (ECN), May 2009

STRING RIBBON™ SOLAR PANELS OFFERING EXCEPTIONAL PERFORMANCE AND INDUSTRY-LEADING ENVIRONMENTAL CREDENTIALS. IN SHORT, MORE ELECTRICITY AND LESS IMPACT.

CERTIFICATIONS PENDING

ELECTRICAL characteristics

Standard Test Conditions (STC)[1]

	ES-C-110 -fa2*	ES-C-115 -fa4*	ES-C-120 -fa2*	ES-C-125 -fa4*	
P_{mp}[2]	110	115	120	125	W
$P_{tolerance}$	-5/+5	-5/+5	-5/+5	-5/+5	%
$P_{mp,max}$	115.5	120.8	126.0	131.1	W
$P_{mp,min}$	104.5	109.3	114.0	118.8	W
η	10.6	11.1	11.6	12.1	%
V_{mp}	16.75	17.92	17.27	18.36	V
I_{mp}	6.57	6.42	6.95	6.81	A
V_{oc}	20.92	22.30	21.34	22.63	V
I_{sc}	7.33	7.15	7.62	7.37	A

Nominal Operating Cell Temperature Conditions (NOCT)[3]

T_{NOCT}	45.4	45.4	45.4	45.4	°C
P_{mp}	80.5	84.2	87.8	91.5	W
V_{mp}	15.33	16.40	15.80	16.80	V
I_{mp}	5.26	5.14	5.56	5.45	A
V_{oc}	19.14	20.40	19.53	20.71	V
I_{sc}	5.86	5.72	6.10	5.90	A

Low Irradiance

The typical relative reduction of panel efficiency at an irradiance of 200 W/m² both at 25°C cell temperature and spectrum AM 1.5 is 0%.

Temperature Coefficients

γP_{mp}	-0.43	%/°C
βV_{mp}	-0.40	%/°C
αI_{mp}	-0.03	%/°C
βV_{oc}	-0.31	%/°C
αI_{sc}	+0.05	%/°C

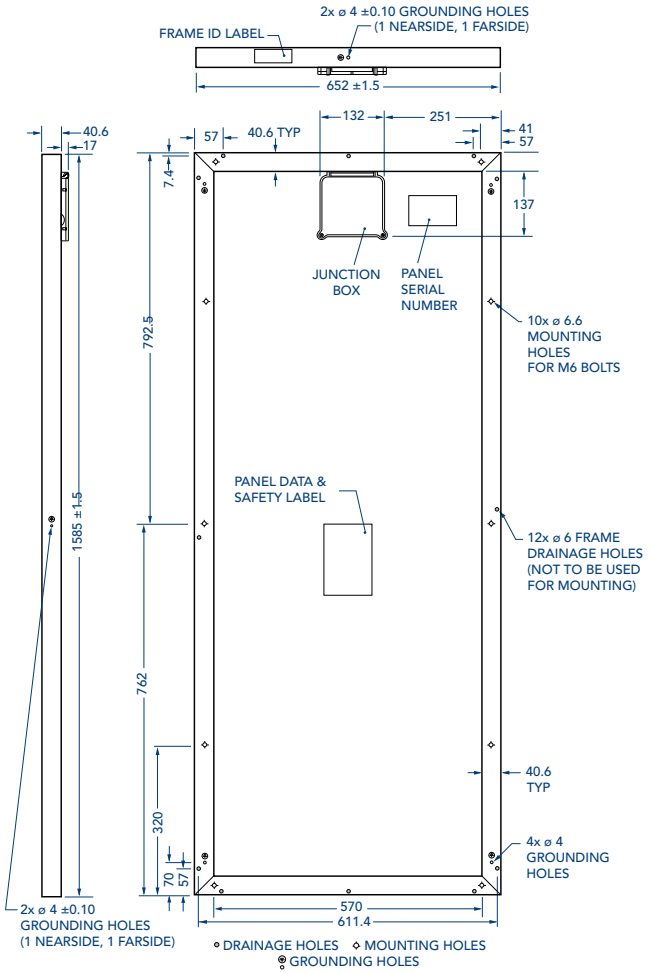
System Design

Junction Box[4]	Conduit Ready
Allowable Cable Sizes	2.5 to 6 mm²
Maximum Reverse Current[5]	15 A
Maximum DC System Voltage (TÜV)	1000 V
Maximum Combined Wind and Snow Load[6]	5.4 kPa

*__1__ 1000 W/m², 25°C cell temperature, AM 1.5 spectrum; __2__ Maximum power point or rated power; __3__ 800 W/m², 20°C ambient temperature, 1 m/s wind speed, AM 1.5 spectrum; __4__ Four 12.7 mm (½ inch) knock-outs available for field wiring; __5__ Also known as Series Fuse Rating; __6__ When the panel is mounted using Mounting Method A (offset mounting) with rails 396 mm (±20 mm) from each short side of the panel as described in the Mounting Guide for this product. __*f__ – framed, __a__ – low voltage circuit design, __2__ – matt blue (textured) cells, 150mm x 80mm. __4__ – matt blue (textured) cells, 150mm x 77mm.*

ELECTRICAL EQUIPMENT
CHECK WITH YOUR INSTALLER

MECHANICAL specifications



ALL DIMENSIONS IN MILIMETERS; PANEL WEIGHT 12.3 KG (27 LBS.)

The above drawing is a graphical representation of the product; for engineering quality drawings please contact Evergreen Solar. Product constructed with 72 (-fa2 model) or 76 (-fa4 model) multi-crystalline silicon String Ribbon™ solar cells, tempered solar glass, EVA encapsulant, polymer back-skin and a clear anodised double-walled aluminum frame.

Product packaged 28 per pallet and tested to International Safe Transit Association (ISTA) Standard 2B. All specifications in this product information sheet conform to EN 50380. See the Evergreen Solar Safety, Installation and Operation Manual and Mounting Guide for further information on approved installation and use of this product.

Due to continuous innovation, research and product improvement, the specifications in this product information sheet are subject to change without notice. No rights can be derived from this product information sheet and Evergreen Solar assumes no liability whatsoever connected to or resulting from the use of any information contained herein.

PARTNER

ES-C_110_120_fa2_115_125_fa4_APAC_010909; effective September 1st 2009

Evergreen Solar Inc.
www.evergreensolar.com

WORLDWIDE HEADQUARTERS
Evergreen Solar Inc.
138 Bartlett Street, Marlboro, MA 01752, USA
T +1.508.357.2221 **F** +1.508.229.0747
info@evergreensolar.com

CUSTOMER SERVICE Americas and Asia
Evergreen Solar Inc.
138 Bartlett Street, Marlboro, MA 01752, USA
T +1.508.357.2221 **F** +1.508.229.0747
sales@evergreensolar.com