Shell

PowerMax® ULTRA

Product Information Sheet
Grid Power

Valid in North America only

165-PC/175-PC

Qualifications and Certificates

The Shell PowerMax Ultra 165-PC and 175-PC products meet the following requirements:

- IEC 61215
- UL-Listing 1703

All these Shell Solar modules are produced in ISO 9001:2000 certified factories.

Limited Warranties*

- Peak Power for 25 years (category D)
- Product workmanship for 2 years

*See Shell Solar Limited Warranty for PV-Modules (U.S.)

Get the Power Advantage

Shell PowerMax Ultra is a line of exceptional performance, reliable photovoltaic modules from Shell Solar. The Shell PowerMax range of products is backed by a company with over 450MW of installed power world-wide. These products, with pre-assembled cables and plugs, are ideal for a wide range of grid connected applications.

Real Power

- High efficiency crystalline solar cells maximize light to electricity conversion
- Optimal energy yields under a wide variety of weather conditions
- Improved performance coefficients result in higher power (PTC) ratings
- Tight power tolerance virtually eliminates field matching requirements
- Power calibrated at the leading United States energy research laboratory

Stable Power

- Higher initial power ratings to fully compensate for typical light induced degradation
- Low frame height virtually eliminates cell shadowing
- Curved frame profile allows snow to easily slide from the modules
- Wide cell to glass edge spacing minimizes in-field power losses due to dirt build-up

Robust Power

- Module design used for more than 25 years of field operations
- Long-term warranties backed by a company committed to solar energy
- Thick, tempered glass used to withstand high wind and snow loads
- All electrical components IP54 sealed
- Different cable lengths ensure plug connections are not directly exposed to the elements
- 12 pre-drilled mounting holes
- 4 easily accessible grounding holes

System Power

- Supports ideal solutions for any system size – from several kilowatts to multi-megawatts
- 600V UL system rating
- Factory panelization available to minimize installation costs and time

Safe Power

- UL fire safety class C

Caring Power

- In-house silicon ingot production uses hydro-electric power
- Product frames can be easily removed and recycled
- Factory panelization eliminates packaging waste

Shell

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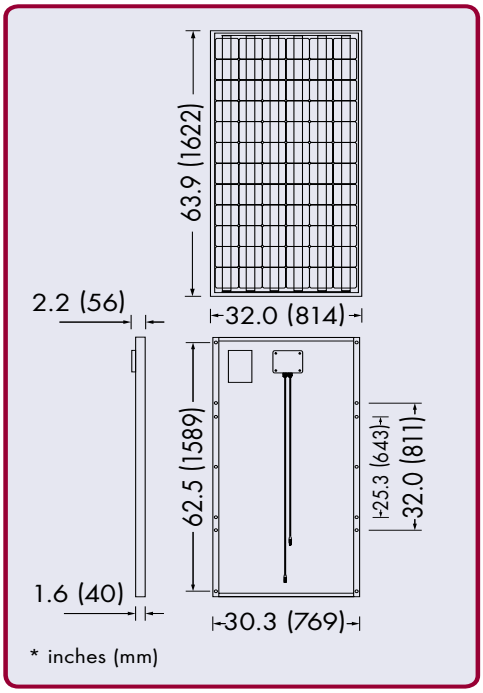
165-PC/175-PC

Mechanical Specification

A torsion and corrosion-resistant anodized aluminium frame ensures dependable performance, even under harsh weather conditions. Pre-drilled mounting holes are provided for ease of installation.



* inches (mm)

Outside dimensions [in]	63.9 x 32.0
Thickness (inc. junction box) [in]	2.2
Thickness (exc. junction box) [in]	1.6
Weight [lbs]	40
Junction box type	ProCharger IP54
Cable length (- male/+ female) [in]	51/39
Cable cross-section [AWG]	12

For ease of installation the junction box includes pre-mounted male and female cables and Multi-Contact® plugs. The junction box allows for easy field replacement of diodes and cable assemblies.

Multi-Contact is a registered trademark of Multi-Contact AG, Switzerland

See the **Shell Solar Installation and Safety Instructions** for further information on installation and use of these products.

Electrical Characteristics

Data at Standard Test Conditions (STC)

STC: irradiance level 1000W/m², spectrum AM 1.5 and cell temperature 25°C

Shell PowerMax Ultra		165-PC	175-PC
Rated power P_r	[W]	165	175
Peak power P_{mpp}	[W]	165	175
Tolerance on peak power	[%]	+/-5	+/-5
Module efficiency η	[%]	12.5	13.3
Max. system voltage V_{sys}	[V]	600	600
Peak power voltage V_{mpp}	[V]	35.0	35.4
Peak power current I_{mpp}	[A]	4.72	4.95
Open circuit voltage V_{oc}	[V]	44.5	44.6
Short circuit current I_{sc}	[A]	5.40	5.43
Max. reverse current I_{fuse}	[A]	20	20
Min. peak power $P_{mpp, min}$	[W]	156.75	166.25
PTC rated power P_{PTC}	[W]	149.1	158.3

The abbreviation 'mpp' stands for maximum power point

Typical Data at Nominal Operating Cell Temperature (NOCT) conditions

NOCT: irradiance level 800W/m², spectrum AM 1.5, wind velocity 1m/s, T_{amb} 20°C

Shell PowerMax Ultra		165-PC	175-PC
Temperature T_{NOCT}	[°C]	45.5	45.5
Peak power P_{mpp}	[W]	120	127
Peak power voltage V_{mpp}	[V]	31.6	32.2
Open circuit voltage V_{oc}	[V]	40.0	40.4
Short circuit current I_{sc}	[A]	4.20	4.25

Typical data at low irradiance

The relative reduction of module efficiency at an irradiance of 200W/m² in relation to 1000W/m² both at 25°C cell temperature and spectrum AM 1.5 is 8%.

Temperature coefficients

Shell PowerMax Ultra		165-PC	175-PC
α P_{mpp}	[%/°C]	-0.43	-0.43
α V_{mpp}	[mV/°C]	-145	-145
α I_{sc}	[mA/°C]	1.4	1.4
α V_{oc}	[mV/°C]	-129	-129

Maximum system voltage:

UL: 600Vdc

ELECTRICAL EQUIPMENT, CHECK WITH YOUR INSTALLER

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