

### Transparent Solar Panel as Building Material

**Centennial Solar** offer state of the art transparent solar panels for use as building material. Today's solar architecture has to fulfill requirements that might be in mutual contradiction. The user of the building wishes to have maximum visual contact to the outside. This is often achieved by glass which may imply:

- Overheating of the building during summertime
- High heating needs during wintertime
- Glare protection is needed to maximize comfort
- Overall energy balance of the building



### Clean Buildings are smart

Clean green buildings use transparent solar panels as primary elements in facades, roof lights, and canopies. Building Integrated Photovoltaic (BIPV) systems lower energy costs, provide glare protection, heat insulation and they play a vital role in reducing green house gases.

Solar Modules generate DC Power that is converted by the inverter into AC. The inverter connects the photovoltaic system to the grid the most effective and economical way of using solar electricity for a building. Usually most of the power is consumed by lighting and plug loads in the building. Excess power is fed into the grid for credit.

Solar panel uses existing support structure thus no additional material and energy is needed.



### Benefits

- Light Management
- Comfort
- Effective Shading
- Glare protection
- Thermal Management
- Innovation for Architecture
- Cost saving by replacing building material

### Applications

- Transparent Canopy
- Insulated transparent façade
- Integrated transparent Atrium
- Transparent windows and doors

### Replaced Building Materials

- Tinted glass, polished stone and marble
- Shading system
- Electrical wiring

**INSULATION, SHADE AND GLARE PROTECTION COMPARISON**

Comparison with conventional glass	Heat Transmittance U-value	Solar Heat Gain Coefficient , g-value
Transparent double glazed solar panel	1.2 W/m <sup>2</sup> K	10%
Double Glazing Clear uncoated	2.7 W/m <sup>2</sup> K	~80%
Double Glazing Clear Low E	1.3 W/m <sup>2</sup> K	30-70%
Glass Laminates	6 W/m <sup>2</sup> K	~80%

**COMPARISON WITH OTHER MATERIAL**

Comparison to conventional building material	Transparent Double Glazed Solar Panel	Internal Roller Blind (White)	External Fabric Canopy	External Venetian Blind(White)
Solar heat gain Coefficient (SHGC)	10%	40%	9%	12%

**SPECIFICATION OF TRANSPARENT BIPV MODULES**

	Laminates	Double Glazing
<b>Mechanical Construction:</b>		
Front Glass(White Glass)	6mm HSG(Heat Strengthened Glass)	6mm HSG(Heat Strengthened Glass)
Interlayer	1.1mm PVB (PolyVinylButyral)	1.1mm PVB(PolyVinylButyral)
Thin Film Solar Plate	See through	See through
Interlayer	1.1mm PVB (PolyVinylButyral)	None
Back Glass	6mm HSG(Heat Strengthened Glass)	8mm SGL(Safety Glass Laminates)
Cable Outlet	Rear side	Lateral
Cable Type/ Diameter(+ ve and -ve)	Double isolated black/ 2.5mm <sup>2</sup>	Double isolated black/ 2.5mm <sup>2</sup>
Outer Diameter/Cable Length	5.2mm / 1M	5.2mm / 1M
Connector ( Male/Female)	Multi-contact	Without connector
<b>Dimension, Weight:</b>		
Dimension ( X/Y)	1204 mm x 2004 mm	1184 mm x 1984 mm
Total Glass Thickness	17mm	34mm
Total Weight	105kg	112kg
<b>Physical Data:</b>		
Heat Transmission (Ug-Value)	~5W/m <sup>2</sup> K	~1.2W/m <sup>2</sup> K
Solar Heat Gain Coefficient	23%	10%
Light Transmission	10%	10%
<b>Electrical Data*</b>		
Initial Nominal Power	117Wp	117Wp
Nominal Power	96Wp	96Wp
Current at Nominal Power	1.33A	1.33A
Short Circuit Current	1.8A	1.8A
Voltage at Nominal Power	72V	72V
Open Circuit Voltage	98V	98V
Maximum System Voltage	1000V	120V
<ul style="list-style-type: none"> <li>*These data represent module performance at Standard Test Condition 1000W/m<sup>2</sup>, AM1.5, 25°C cell temperature)</li> <li>Please see specification sheet for transparent modules rated at 25W, 50W, 75W and more</li> <li>The specification are subject to change without notice</li> </ul>		

**CONTACT**

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