

- ◆ Maximum quality standard modules
- ◆ Ultrafine high efficiency cells
- ◆ Generating energy since 1981
- ◆ Strength and reliability
- ◆ Tested and certified by TÜV

## PHOTOVOLTAIC MODULES ISF-190 / 195 / 200 / 205 / 210

### Monocrystalline solar modules



#### PHYSICAL CHARACTERISTICS

|                         |                                                                                                                    |
|-------------------------|--------------------------------------------------------------------------------------------------------------------|
| CELL TYPE               | With antireflection layer, textured, Monocrystalline Si size 156 x 156 mm (6x6 in)                                 |
| CONTACTS                | Redundant, multiple contacts in each cell                                                                          |
| CELLS NUMBER PER MODULE | 54 cells in serial                                                                                                 |
| STRUCTURE               | 1) Tempered microstructured high transmittance glass<br>2) EVA laminated cells<br>3) Tedlar/Polyesther back layers |
| FRAME                   | Anodized aluminium                                                                                                 |
| GROUND                  | Yes                                                                                                                |
| ANTITHEFT DRILL         | Yes                                                                                                                |
| INTERCONNECTION         | PCB                                                                                                                |
| INTERCONNECTION BOXES   | 1 x IP 65 with bypass diode                                                                                        |
| WIRES                   | 1 m (+); 1 m (-); 4 mm <sup>2</sup> Multicontact MC4 or similar                                                    |



For further details please visit  
[isofoton.com](http://isofoton.com)

#### TYPICAL VALUES FOR SYSTEM INTEGRATION

|                                 |                                                                             |
|---------------------------------|-----------------------------------------------------------------------------|
| MAXIMUM VOLTAGE ALLOWED         | 1.000 V                                                                     |
| REVERSE CURRENT OVERLOAD        | 2 h overload at 135% of maximum protection value                            |
| MAXIMUM MECHANICAL LOAD ALLOWED | 5.400 Pa (0,78 psi)                                                         |
| OPERATION CONDITIONS            | -40 °C to 85 °C (-40 to 185 °F)                                             |
| IMPACT RESISTANCE               | 25 mm (0.98 in) hail, from 1 m (39,37 in) of distance at 23 m/s (51.45 mph) |

#### GENERAL CHARACTERISTICS

|                               |                                                                       |
|-------------------------------|-----------------------------------------------------------------------|
| DIMENSIONS                    | 1.515 x 994 x 45 mm (59,65x39,1x1,77 in)                              |
| WEIGHT                        | 17,1 kg (37,7 lb)                                                     |
| PACKAGING CONDITIONS          | 20 modules per box (4 modules per box as option)                      |
| PACKING BOX SIZE FOR 25 units | 1.573 x 1.045 x 1.220 mm (61,93x41,14x48,03 in)(recyclable materials) |



## PERFORMANCE AT STANDARD TEST CONDITIONS (STC)

|                                               | ISF-190 | ISF-195 | ISF-200 | ISF-205 | ISF-210 |
|-----------------------------------------------|---------|---------|---------|---------|---------|
| MAXIMUM POWER RATING -P <sub>max</sub> - (W)  | 190     | 195     | 200     | 205     | 210     |
| OPEN CIRCUIT VOLTAGE -V <sub>oc</sub> - (V)   | 33      | 33,1    | 33,2    | 33,2    | 33,3    |
| MAXIMUM POWER VOLTAGE -V <sub>mpp</sub> - (V) | 26,4    | 26,6    | 26,6    | 26,6    | 26,7    |
| SHORT CIRCUIT CURRENT -I <sub>sc</sub> - (A)  | 8,05    | 8,05    | 8,17    | 8,3     | 8,35    |
| MAXIMUM POWER CURRENT -I <sub>mp</sub> - (A)  | 7,20    | 7,35    | 7,52    | 7,71    | 7,87    |
| MODULE EFFICIENCY (%)                         | 12,8    | 13,1    | 13,4    | 13,7    | 14      |
| OUTPUT TOLERANCE (% P <sub>max</sub> )        | ± 3%    | ± 3%    | ± 3%    | ± 3%    | ± 3%    |

Measured in solar simulator Class A, according to IEC-60904-9Ed.2, certified by TÜV Rheinland

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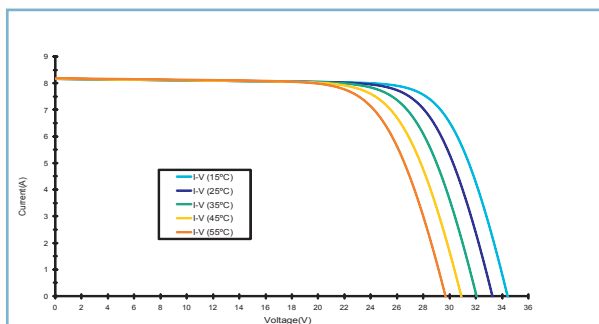
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## PERFORMANCE AT 800 W/m<sup>2</sup>, NOCT, AM 1,5

|                                               | ISF-190 | ISF-195 | ISF-200 | ISF-205 | ISF-210 |
|-----------------------------------------------|---------|---------|---------|---------|---------|
| MAXIMUM POWER RATING -P <sub>max</sub> - (W)  | 136     | 140     | 143     | 147     | 150     |
| OPEN CIRCUIT VOLTAGE -V <sub>oc</sub> - (V)   | 29,9    | 30,0    | 30,1    | 30,1    | 30,1    |
| MAXIMUM POWER VOLTAGE -V <sub>mpp</sub> - (V) | 23,4    | 23,6    | 23,6    | 23,6    | 23,7    |
| SHORT CIRCUIT CURRENT -I <sub>sc</sub> - (A)  | 6,44    | 6,44    | 6,54    | 6,64    | 6,68    |
| MAXIMUM POWER CURRENT -I <sub>mp</sub> - (A)  | 5,80    | 5,92    | 6,05    | 6,23    | 6,34    |
| OUTPUT TOLERANCE (% P <sub>max</sub> )        | ± 3%    | ± 3%    | ± 3%    | ± 3%    | ± 3%    |

Reduction in efficiency from 1000 W/m<sup>2</sup> to 200 W/m<sup>2</sup> at 25°C, according to IEC-60904-1: 5%(+/-3%)

## I-V VARIATION OF ISF-200 ACCORDING TO CELL'S TEMPERATURE

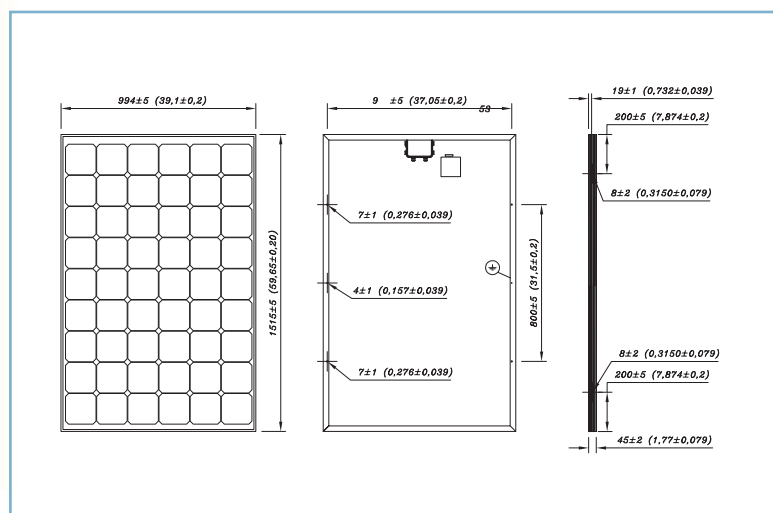


### TEMPERATURE COEFFICIENTS

|                      |                |
|----------------------|----------------|
| T <sub>0</sub> NC    | 47°C + / - 2°C |
| TCC I <sub>sc</sub>  | 0,0294 % / K   |
| TCC V <sub>oc</sub>  | -0,387 % / K   |
| TCC P <sub>max</sub> | -0,48 % / K    |

REMARKS:  
All specifications are subject to change without prior notification by ISOFOTÓN S.A.  
This commercial sheet meets the requirements of EN 50380

## DIMENSIONS



The longitudinal and transversal size does not include the head of the rivets (+3,2 mm)