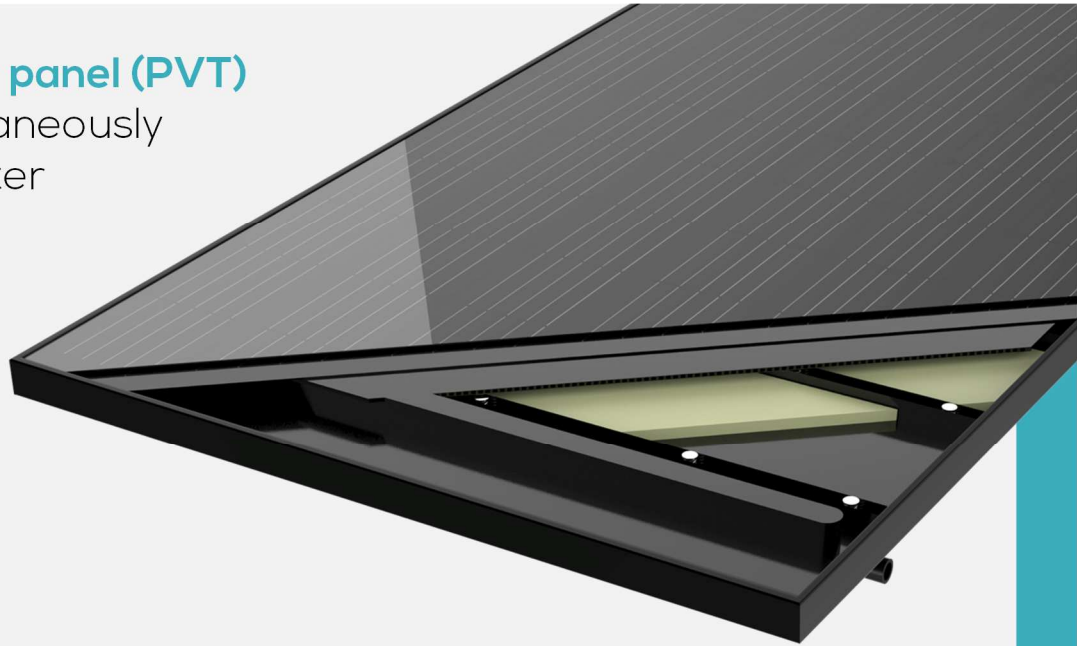


# DUALSUN 310 Wp

## Spring : A hybrid solar panel (PVT)

that generates simultaneously electricity and hot water



### Photovoltaic

Dimensions of a standard photovoltaic panel (60 6-inch cells)

High-efficiency monocrystalline cells, cooled by water circulation on backside of panel

Nominal PV power : 310 Wp

### Thermal

Ultra-thin heat exchanger, completely integrated into panel (DualHeat® patented design)

Excellent heat transfer between photovoltaic frontside and water circulation on backside, for an increased photovoltaic efficiency (DualBoost® effect)

Thermal power output : 570 W/m<sup>2</sup> \*

\* Performances measured during Solar Keymark certification



## Flash : A high-performance photovoltaic panel (PV) 100% identical to DualSun Spring hybrid panels

- Same dimensions
- Same appearance
- Same electrical characteristics



25-year PV power warranty, 10-year product warranty

Certified IEC 61215 & 61730 and Solar Keymark (Europe)  
CEC (Australia), UL 1703 (USA)



Spring 310M Non-Insulated : DualSun – 310M – 60 – 3BBPN  
Spring 310M Insulated : DualSun – 310M – 60 – 3BBPI  
Flash 310M : DualSun – 310M – 60 – 0BBP

# TECHNICAL DATA

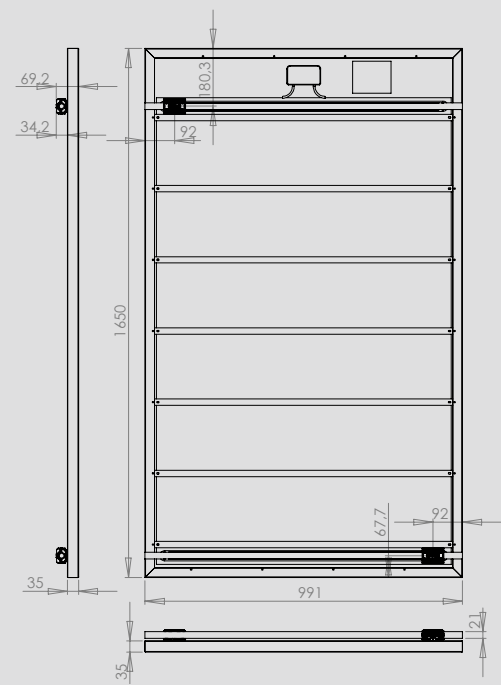
## GENERAL DATA (SPRING & FLASH)

Length	1650 mm		
Width	991 mm		
Frame width	35 mm		
Frame color / backsheet	Black / Black		
Maximum load	5400 Pa (snow) / 2400 Pa (wind)		
Weight empty / filled	Flash	Spring NI*	Spring I*
	16,2 kg / NA	22 / 27 kg	22,8 / 27,8 kg

\* NI = Non-Insulated, I = Insulated

## ELECTRICAL DATA (SPRING & FLASH)

Number of cells per module	60
Cell type	Monocrystalline
Nominal power ( $P_{mpp}$ )	310 Wp
Module efficiency	19 %
Power tolerance	+/- 3 %
Rated voltage ( $V_{mpp}$ )	33,2 V
Rated current ( $I_{mpp}$ )	9,35 A
Open circuit voltage ( $V_{oc}$ )	40,3 V
Short circuit current ( $I_{sc}$ )	9,98 A
Maximum system voltage	1000 V DC
Reverse current load	20 A
NOCT	45 ± 2°C
Connectors	MC4
Application class	Class A
Voltage ( $\mu Voc$ )	-0,286 %/°C
Current ( $\mu Isc$ )	0,057 %/°C
Efficiency loss	-0,370 %/°C



Non-insulated version.

## THERMAL DATA (SPRING only)

Gross area	1,635 m <sup>2</sup>		
Volume of heat transfer liquid	5 L		
Maximum operating pressure	1,2 bar		
Pressure loss per panel (Pa   mmWS)	Portrait	Landscape	at 32 L/h
	59   6	167   17	
Hydraulic input/output	DualQuickfit® fittings		
	DualQuickfit® fittings		
Maximum temperature	Non-Insulated		Insulated
	70 °C		80 °C
Optical efficiency $\alpha_0$	55,9 % *		47,2 % *
Heat loss coefficient $\alpha_1$	15,8 W/K/m <sup>2</sup> *		9,1 W/K/m <sup>2</sup> *
Heat loss coefficient $\alpha_2$	0 W/(m <sup>2</sup> .K <sup>2</sup> ) *		

\* The  $\alpha_0$ ,  $\alpha_1$  et  $\alpha_2$  coefficients are the measured values from testing during EN 12975 certification at the TÜV Rheinland for unglazed collectors with a windspeed  $u = 1\text{m/s}$ :  $\alpha_0 = n_0 - c_6 \cdot u$ ;  $\alpha_1 = c_1 + c_3 \cdot u$ .

## Power output as a function of the temperature of the water in the panel (by application)

Power values are calculated using the  $\alpha_0$ ,  $\alpha_1$  coefficients and the panel surface (1,635m<sup>2</sup>) in STC conditions (Text = 25°C, G = 1000 W/m<sup>2</sup>).

