



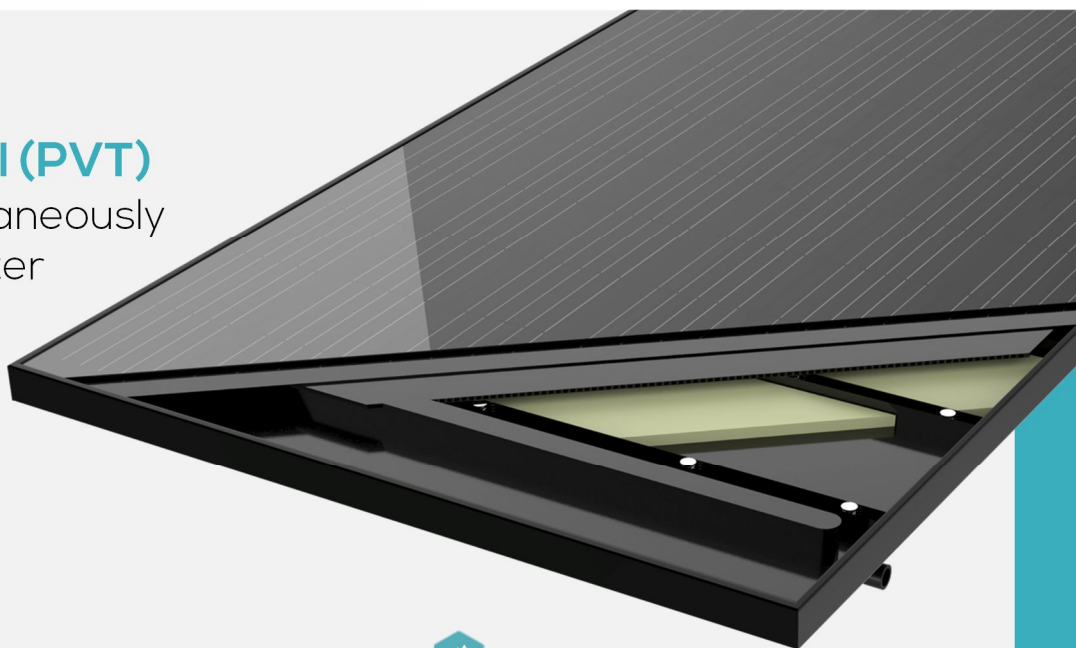
DUALSUN

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/m² *

* 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



Product warranty:

Up to 20-year product warranty on the Flash
And 10-year for the Spring
25-year PV power 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

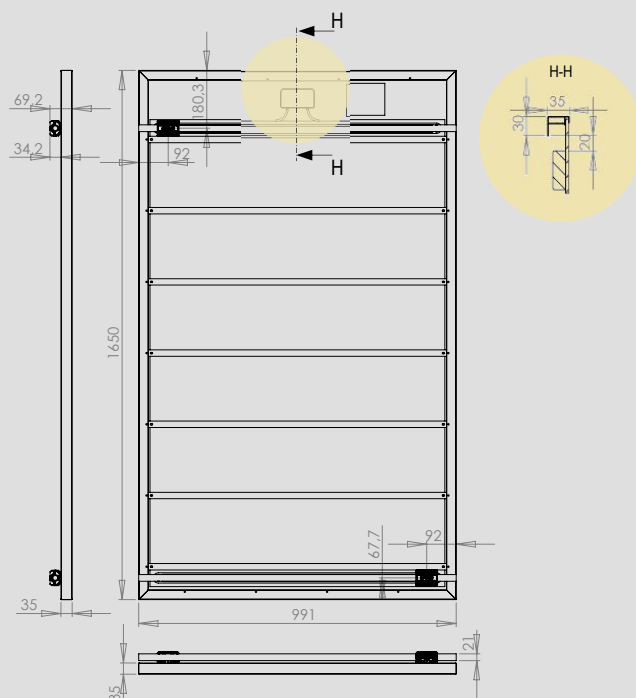
GENERAL DATA (SPRING & FLASH)

Length	1650 mm		
Width	991 mm		
Frame width	35 mm		
Frame color / backsheet	Black / Black		
Maximum load	5400 Pa (snow) / 2400 Pa (wind)		
	Flash	Spring NI*	Spring I*
Weight empty / filled	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})	33.1 V
Rated current (I_{mpp})	9.36 A
Open circuit voltage (V_{oc})	40.5 V
Short circuit current (I_{sc})	10,02 A
Maximum system voltage	1000 V DC
Reverse current load	20 A
NOCT	45 ± 2°C
Connectors	MC4
Application class	Class II
Voltage temperature coefficient ($\mu V_{oc}/^{\circ}C$)	-0.286 %/°C
Current temperature coefficient ($\mu I_{sc}/^{\circ}C$)	0.057 %/°C
Power temperature coefficient ($\mu P_{mpp}/^{\circ}C$)	-0.370 %/°C



Non-insulated version of the Spring panel with DN15 DualQuickfit fitting

THERMAL DATA (SPRING only)

Gross area	1,635 m²		
Volume of heat transfer liquid	5 L		
Maximum operating pressure	1,2 bar		
Pressure loss per panel (Pa mmWS)	Portrait	Landscape	
	59 6	167 17	at 32 L/h
	461 47	961 98	at 100 L/h
Hydraulic input/output	DualQuickfit® fittings		
	Non-Insulated	Insulated	
Maximum temperature	70 °C	80 °C	
Optical efficiency α ₀	55,9 % *	47,2 % *	
Heat loss coefficient α ₁	15,8 W/K/m² *	9,1 W/K/m² *	
Heat loss coefficient α ₂	0 W/(m².K²) *		

* The a_0 , a_1 et a_2 coefficients are the measured values from testing during EN 12975 certification at the TÜV Rheinland for unglazed collectors with a windspeed $u = 1 \text{ m/s}$: $a_0 = n_0 - c_6 \cdot u$; $a_1 = c_1 + c_3 \cdot u$.

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

Power values are calculated using the a_0 , a_1 coefficients and the panel surface (1.635m²) in STC conditions (Text = 25°C, G = 1000 W/m²).

