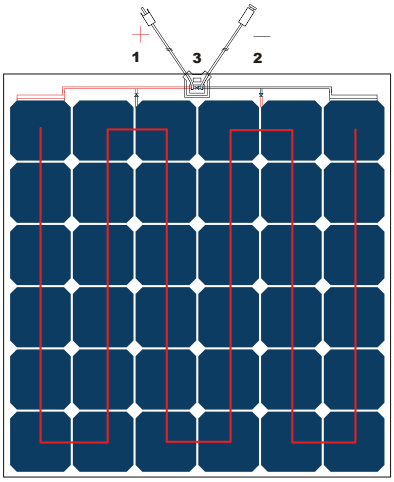
When shading is unavoidable

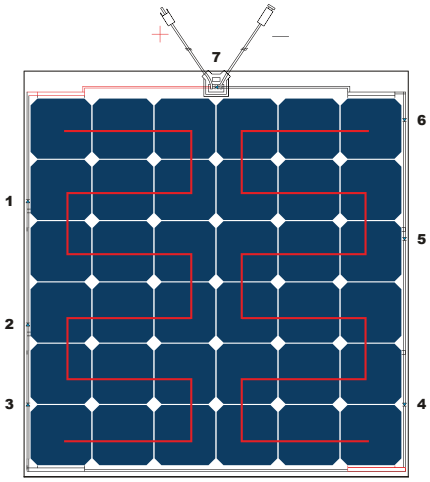
Guardian option

Solbianflex SX panels can be offered with a modified cells topology. Thanks to the way Day4Energy™ solar cells are electrically connected, a larger number of bypass diodes can be integrated in the panel. The result is a panel that is far less sensitive to shading, a clear advantage in all kind of installations but especially on sailing boats, where shadows are unavoidable.

In a standard cell layout, where bypass diodes can be inserted any two strings (columns) of cells, the typical configuration consists of two or three bypass diodes, in the Guardian layout instead, five, seven or even nine diodes can be inserted.



Standard layout: SX 176 Q - 36 cells - 3 diodes
In red the path of the current



Guardian layout: SX 176 G - 36 cells - 7 diodes
In red the path of the current

Guardian SX models

	Length (mm)	Width (mm)	Thickness (mm)	Weight (kg)	Peak Power (W)	Rated Voltage (V)	Rated Current (A)	Number of cells	Number of diodes
SX 176 G	1075	994	2	2.6	176	19.9	8.9	36	7
SX 118 G	754	1016	2	1.8	118	13.3	8.9	24	5

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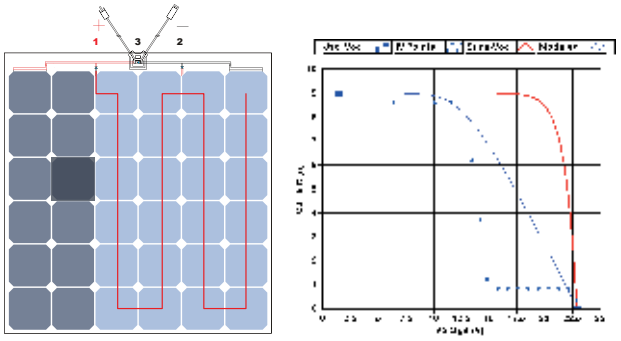
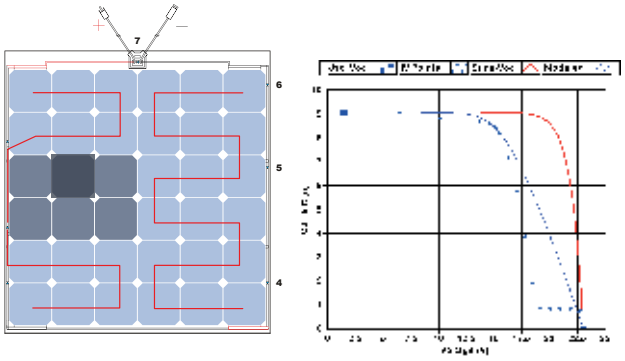
The result of an increased number of diodes is striking. While a single shaded cell can halve the power of a regular panel, the same shadowing affects much less a Guardian, which can lose as low as one ninth of its power.

SHADING TRIALS: ONE SHADED CELL

Standard Layout



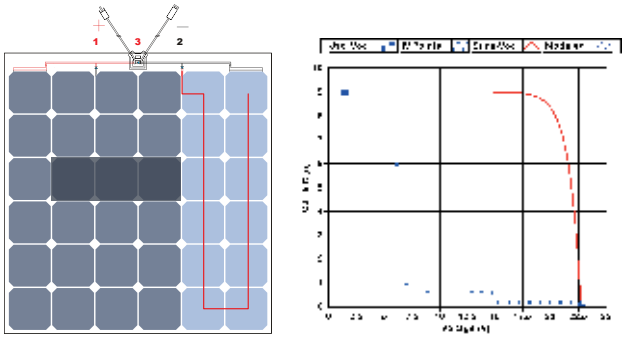
Guardian Layout



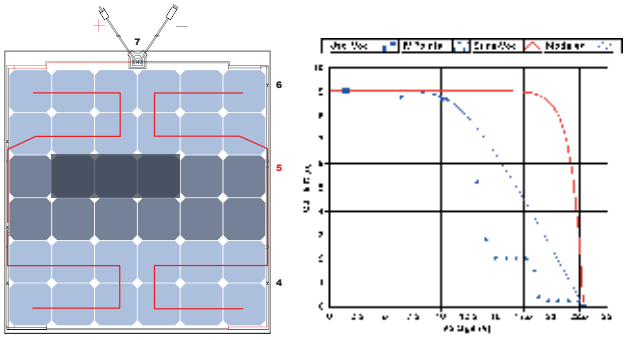
	Layout	Cells	N° Shaded Cells	N° Diodes	Power (unshaded)	Power (shaded)	Power loss
SX 176 Q	Standard	36	1	3	176 W (red curve)	111 W (blue points)	37%
SX 176 G	Guardian	36	1	7	176 W (red curve)	142 W (blue points)	19%

SHADING TRIALS: THREE SHADED CELLS

Standard Layout



Guardian Layout



	Layout	Cells	N° Shaded Cells	N° Diodes	Power (unshaded)	Power (shaded)	Power loss
SX 176 Q	Standard	36	3	3	176 W (red curve)	41 W (blue points)	77%
SX 176 G	Guardian	36	3	7	176 W (red curve)	102 W (blue points)	42%

Dark grey cells are the shaded ones.

Light grey cells are the no-shaded cells that are affected by the shading. Red lines show the current path.