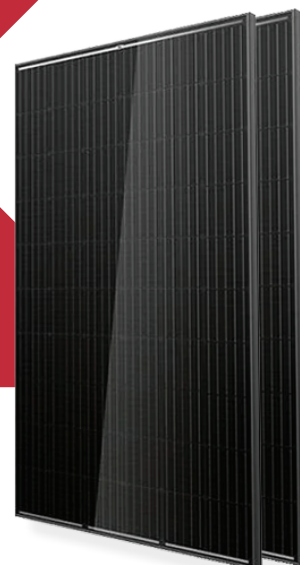


# Half-Cell Black X 540 fotovoltaic panels

- ✔ 21,2% - Maximum panel efficiency
- ✔ 20 years product warranty
- ✔ 25 year performance warranty
- ✔ State-of-the-art Half-Cell technology
- ✔ All-Black



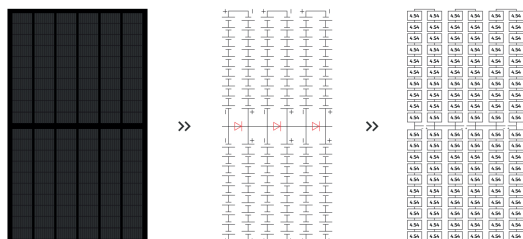
## ✔ Best warranties on the market

Panels are covered by the longest warranty on the Czech market. With a 20-year warranty against defects in the panels, we guarantee that the panels will retain their excellent quality for at least 20 years. On the performance of the panels we provide a guarantee of up to 25 years.

## ✔ Smaller losses

Our solar panels have twice as many internal strings as conventional panels. This design effectively deals with the mismatch between cells caused by shading, degradation of performance when out of sync, and overall contributes to optimized performance.

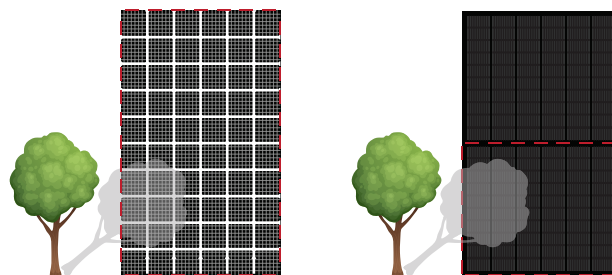
### Half-Cell Black X 540 panels double the amount of internal chains



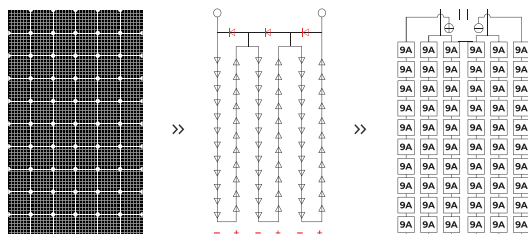
Module current output is  $4.5 + 4.35 = 8.75$  A, series current mismatch is 0.15 A  
Developed for Energetický Holding Malina a.s.

Example of panels commonly available on the market with six internal chains

Panel Gen2 Half-Cell Black X 540



Example of panels commonly available on the market with six internal chains



Module current output is 8.7 A, series current mismatch is 0.3 A

The Half-Cell Black series consists of two separate and identical arrays of solar cells, which means that the normal cell chains are split in half and these shorter chains form arrays that have separate current paths.

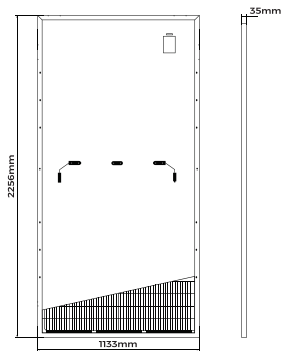
If a module is shaded, this will affect the production of only one side of the shaded array, while the other array will still produce power on maximum.

By splitting the solar cell in half, we have reduced the internal energy loss and also reduced the hot spot effect, which is the loss of efficiency due to localized overheating.

# Half-Cell Black X 540 fotovoltaic panels

Type designation: 540S2HC -144

## Technical dimensions



## Technical specifications

Solar cells	PERC Monocrystalline 182 x 91 mm
External dimensions	2256 x 1133 x 35 mm
Front glass	3.2 mm tempered glass with AR semi-fibre, low iron content
Weight	27,2 kg
Output cable	Ø4.0 mm, cable length 300 mm
Conector	Compatible with MC4
Junction box	IP 68,3 diodes
Frame	Anodized aluminium alloy

## Operating characteristics

Maximum system voltage	DC 1500 V
Back current limitation	15 A
Operating temperature range	-40°C a 85°C
Max. static front load (e.g. snow)	5400 Pa
Max. static load (e.g. wind)	2400 Pa
Max. hail impact (diameter, velocity)	25mm / 23m/s

## Temperature characteristics

Temperature coefficient $I_{sc}$	+0.048 % / °C
Temperature coefficient $V_{oc}$	-0.31 % / °C
Temperature coefficient $P_{max}$	-0.38 % / °C
Nominal operating temperature of the cell	43 ±2 % / °C

## Electrical properties (STP\*)

Maximum power in STP $P_{mp}$	540 W
Maximum power voltage in $V_{mp}$	41.65 V
Maximum power current $I_{mp}$	12.97 A
No-load voltage	49.50 V
Short circuit current	13.85 A
Module efficiency in STP	21.2 %

\*STP : radiation intensity 1000 W/m<sup>2</sup>, cell temperature 25 °C, AM spectrum 1.5g. Power tolerance : ±3 %

