

# New 400W solar modules – KOSTAL delivers

**Power generation**  
Compatible with new generation of modules

New cell and module formats are emerging on the market. This makes the choice of the right inverter crucial. KOSTAL is already compatible with the new generation of modules.

Advances and developments in the semiconductor sector are resulting in new photovoltaic cell and module formats. The primary material of the solar cells – the so-called wafer – is being produced from larger and larger silicon ingots. The polycrystalline 6" (156 mm) cells that have been used since around 2006 have been refined over the last few years into 6"+ (166 mm) cells. Now another size change is in the offing.

With the introduction of M10 and M12 wafer technologies, photovoltaic cells are growing to edge lengths of 182 mm and 210 mm respectively. This affects the internal circuitry of the modules and therefore the voltage and current values, as well as the power class.

**Important:** Larger cells result in larger currents. The number of cells connected in series determines the voltage of the solar module.

## Mainly found on the module market so far:

### Performance class

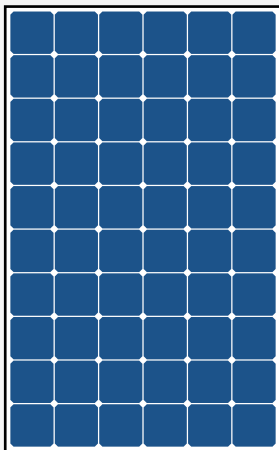
- e.g. LG 400 Q1C NeON R
- 60 cells (166 mm)
  - up to 10.8 A (400 Wp)**
  - > 22 % efficiency

### Standard class

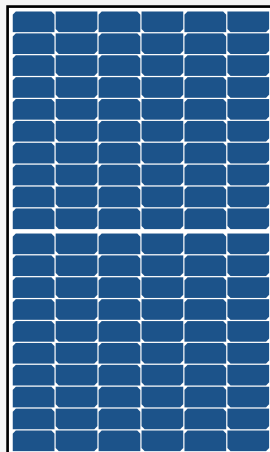
- e.g. Solar Fabrik 375 W S3
- 120 half-cut cells (166 mm)
  - approx. 10.5 A (375 Wp)**
  - > 20 % efficiency

### Project class

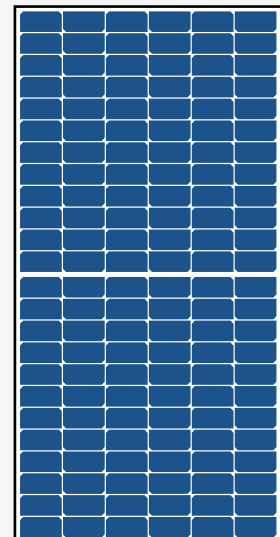
- e.g. Longi LR72HPH
- 144 half-cut cells (166 mm)
  - approx. 10.7 A (440 Wp)**
  - > 19 % efficiency



1042 x 1740 mm



1038 x 1755 mm



1038 x 2094 mm



With conventional module formats, one inverter with an 11 A current input is usually still sufficient.



For solar modules with a glass cover area of more than 2 square metres, in Germany installation is only recommended in open spaces as solar installations on roofs are subject to building regulations.

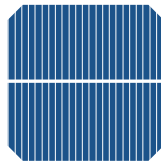
## SOLAR ELECTRIC

### New module formats:

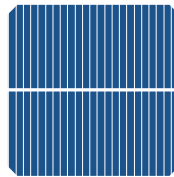
With the introduction of the 182 mm and 210 mm cells, internal circuitry and cell processing are changing.

For reasons of efficiency and ease of manufacturing, the cells are cut into two or three parts and connected in series and in parallel in the module. As a result, the new modules have slightly different frame dimensions.

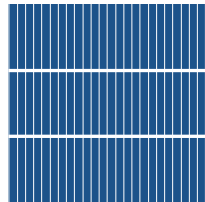
The following new module formats are now appearing on the market, especially for systems in the order of magnitude up to 200 kWp:



166 mm half cell



182 mm half cell



**New: Division into one-third cells**  
210 mm one-third cell

### 108 half-cell module (182 mm)

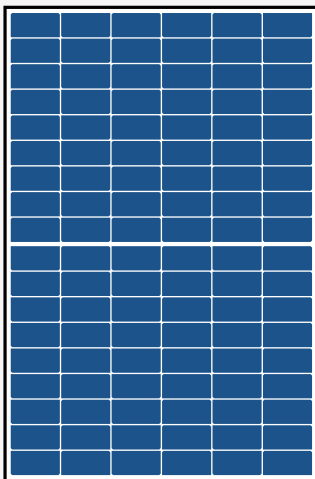
e.g. Suntech STP405S

- Cell matrix: 6 x 18 half cells
- Imp<sub>p</sub>: 12.9 A (405 Wp)**
- Efficiency (405 Wp): > 21 %

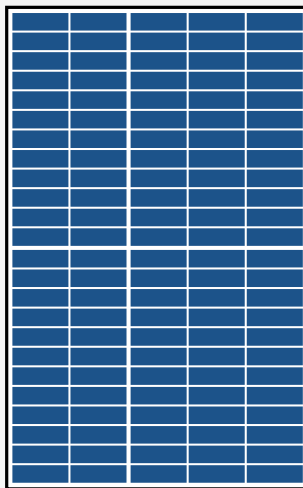
### 120 one-third cell module (210 mm)

e.g. Trina Vertex S

- Cell matrix: 5 x 24 one-third cells
- Imp<sub>p</sub>: 11.77 A (405 Wp)**
- Efficiency (405 Wp): > 21 %








1134 x 1724 mm



1096 x 1754 mm

The higher module currents pose new challenges for the inverters. Thanks to a **maximum current input of at least 13 A**, KOSTAL inverters can also be operated **very effectively** with the latest module technologies.

	PLENTICORE plus / PIKO IQ	PIKO MP plus	PIKO 12 – 20	PIKO CI 30	PIKO CI 50/60
					
<b>max. current per input [A]</b>	<b>13</b>	<b>13</b>	<b>20</b>	<b>13</b>	<b>13</b>
MPP trackers	2/3	1/2	2/3	2	4

Smart connections.

KOSTAL is compatible with many manufacturers offering the new generation of 400 W solar modules. The KOSTAL SOLAR PLANNER is available to download free of charge for detailed system design.

**Tip:** The PLENTICORE plus has up to three MPP inputs. In a device network, e.g. with a connected battery, you even have five or more MPP inputs available.

