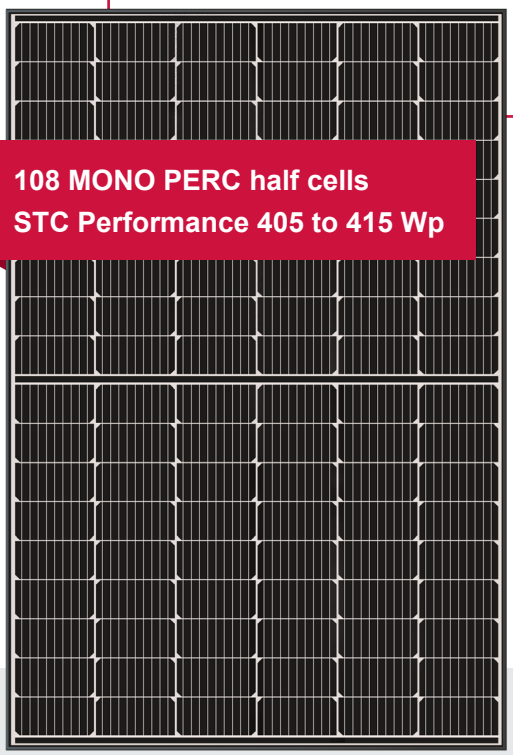
MX GLASS/GLASS

CLASSIC



108 MONO PERC half cells
STC Performance 405 to 415 Wp

More performance guaranteed

- **Glass-glass modules are highly resilient and resistant**
- **Stronger protection for solar cells and longer life of the photovoltaic system**
- **Up to 30 percent more energy yield by using both sides of the module**
- **Better shading properties due to halfstring technology**
- **More power through use of 10-busbar technology and halfcut solar cells**
- **Optimized used cell surface due to fine round wires**
- **Made in the EU**
- **Optionally available with e.STAK frame**

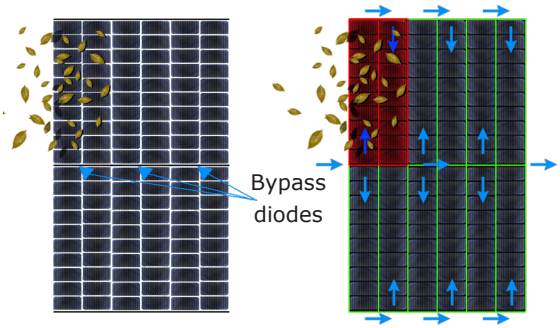
e.STAK®
Strong, Stable and Sustainable.

The e.STAK stacking and packaging system from energetica ensures that the modules arrive at their destination stable and without microcracks: In the stack, the specially developed frame profiles of the modules interlock. In combination with the film, they form a stable unit.

Slipping of the modules on the pallet becomes virtually impossible. The packaging material is reduced to the bare minimum. Moreover, the film used is made of biogenic plastic.

Halfcut panel technology

Significantly improved behavior during partial shading: If one half of the module is shaded, the second half of the module still generates full power.



energetica

energetica Industries GmbH
Energieplatz 1 | 9556 Liebenfels | Austria
P +43 4215 93 056
E office@energetica.at
energetica.at

e.Classic MX Glass/Glass Technical data

Electrical data (STC)

Type	405	410	415
Maximum power P_{Max} [Wp]	405	410	415
MPP voltage U_{MPP} [V]	31.16	31.31	31.46
MPP current I_{MPP} [A]	13.00	13.09	13.19
Open circuit voltage U_{OC} [V]	36.93	37.08	37.23
Short circuit current I_{SC} [A]	13.61	13.70	13.80
Module efficiency η_{Modul} [%]	20.68%	20.93%	21.19%
Performance sorting [Wp]	0/+5	0/+5	0/+5

These measurements are valid under standard test conditions STC. All electrical data ±10%. Measurement uncertainty P_{MPP} (P_{Max}): +/- 3%, (Airmass AM 1.5; radiation of 1000W/m²; cell temperature 25°C)

Bifacial Output-Rearside Power Gain

	Nominal watt class	405	410	415
5%	Maximum Power (P_{Max}) [W]	425,3	430,5	435,8
	Module Efficiency (%)	21,71	21,98	22,25
15%	Maximum Power(P_{Max}) [W]	465,75	471,5	477,25
	Module Efficiency (%)	23,78	24,07	24,37
25%	Maximum Power (P_{Max}) [W]	506,25	512,5	518,75
	Module Efficiency (%)	25,85	26,17	26,49

Electrical data (NMOT)

Type	405	410	415
Maximum power (P_{Max}) [Wp]	306.6	310.3	314.1
MPP voltage U_{MPP} [V]	28.90	29.04	29.18
MPP current I_{MPP} [A]	10.60	10.68	10.76
Open circuit voltage (V_{OC}) [V]	34.86	35.00	35.15
Short circuit current I_{SC} [A]	10.90	10.97	11.05

NMOT (Nominal Module Operating Temperature): Irradiance 800 W/m², ambient temperature 20 °C, wind speed 1 m/s. All technical data +/- 10 %

Permissible operating conditions

Temperature range	-40°C to +90°C
Maximum system voltage	1,000 V, opt. 1,500 V
Test $load_{max}$	tested according to IEC up to 5.4 kPa snow / 2,4 kPa wind
Breaking load	> 6.0 kPa
Hail resistance	hailstone up to 25 mm Ø at 46 m/s v_{impact}
maximum reverse current	16 A

Temperature coefficient (Tc)

Tc short circuit current α	0.05 %/°C
Tc open circuit voltage β	-0.26 %/°C
Tc maximum power γ	-0.33 %/°C
NMOT	43.5°C +/- 2

Note: This data sheet is a preliminary document and may still be adjusted until market launch. energetica Industries has the sole right to make these changes at any time without prior notice. The data given are without guarantee. Product illustrations are symbolic images and may differ in appearance and data from the original.

Certifications (pending)

Certifcations / product tests	IEC 61215, IEC 61730 IEC 62716 (Ammonia corrosion test) IEC 61701 (Salt mist corrosion test) EN 61000-4-2 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6 Safety Class II PID, LID, LeTID
Module fire performance	Class A

Warranties

Product warranty	17 years
Output warranty of P_{MAX} (Measurement tolerance ± 3%)	25 years linear acc. warranty conditions

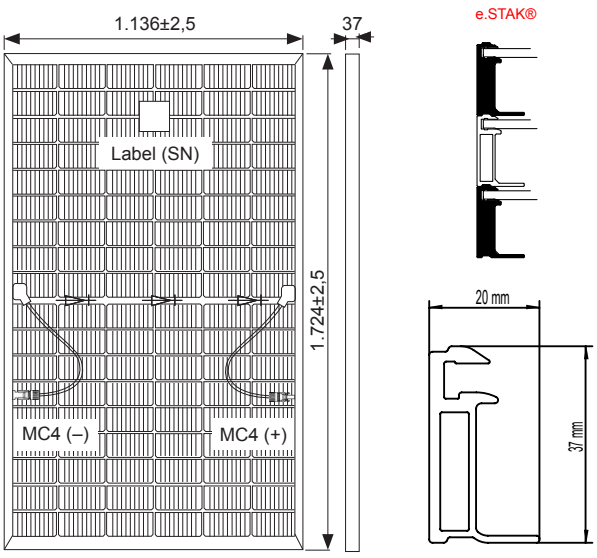
Mechanical Data

Dimensions (HxWxD)	1,724 x 1,136 x 37 mm
Weight	25 kg
Front glass	transparent tempered anti-reflective glass 2 mm
Backsheet	2 mm tempered glass
Frame optional	black anodized aluminum 37 mm
Cells	108 high efficiency solar half cells
Cell type	mono PERC, Bifacial, 10 busbars
Bypass control	3 diodes
Modul connector	4 mm² solar cabel (+,-) 1,200 mm
Connectors	multi-contact MC4, P65 (IP68) (original Stäubli)
Origin	Made in EU

Paletts / Truck load

Pieces per palett	29
Pieces per truck	812

Aluminum frame, black anodized
16x Drainage hole. Junction box (IP68)



All indicated dimensions in mm