



# Helius energy

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## HELIUS ASTER

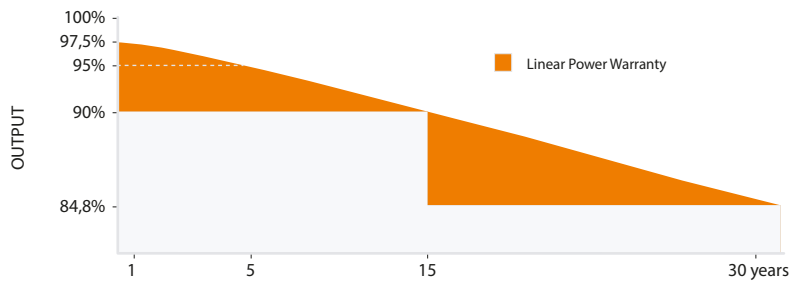
### HMF108M10

30-year linear power output warranty



Premium Monocrystalline Cells  
MBB Half Cell Technology

#### Superior Warranty



INMETRO, IEC 61215, IEC 61730, IEC TS 62804, IEC 61701  
ISO 9001:2008 - ISO 14001:2004 - OSHAS 18001:2007



#### Superior Quality

With MBB technology and half cell design, Helius Energy panels reduce cover of cell by busbars and improve current collection ability on cloudy days.



#### High Efficiency and Power Density

High conversion efficiency and up to 425W on 1,95m<sup>2</sup> (21,67%).  
More gain power per square meter.



#### Performance Warranty

With up to 30 years of solar generation, Helius Energy warranty can guarantee the longevity of your project.



#### Light and Reliable

Much lighter modules with thicker frames to ensure module resilience. Modules could be applied under ammonia, salt mist, high temperature, high humidity condition.



#### Fire-Proof Performance

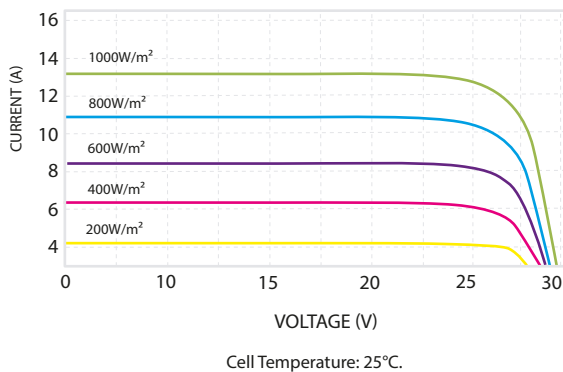
Modules are approved and tested under IEC 61730 and Class C Fire Test.

## Mechanical Characteristics

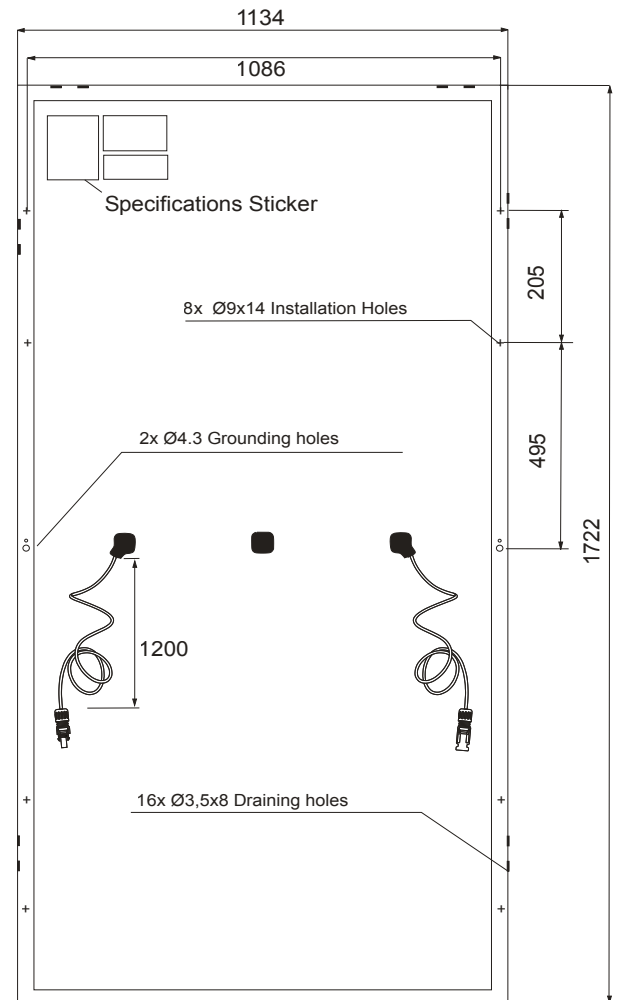
Dimensions	1722 x 1134 x 30mm
Solar Cells	108 Monocrystalline Cells
Weight	21,5 kg
Frame	Anodized Aluminium Alloy
Frontal Glass	2mm High Transmission, Low Iron Tempered
J-Box	IP68 / 3 bypass diodes
Cables	4mm <sup>2</sup> / length 1200mm

## Temperature Characteristics

Temperature Coefficient I <sub>sc</sub>	0,045% / °C
Temperature Coefficient V <sub>oc</sub>	-0,275% / °C
Temperature Coefficient P <sub>max</sub>	-0,34% / °C
Nominal Module Operating Temperature NMOT	45°C + -2°C
Operational Temperature	-40°C a +85°C



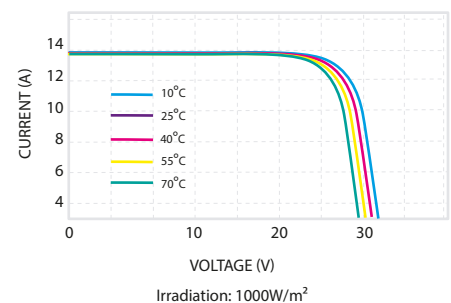
## Technical Dimensions (mm)



## Electrical Characteristics

HMF108M10	410HL	415HL	420HL	425HL
Maximum Power P <sub>Max</sub> (W)	410	415	420	425
Maximum Power Voltage V <sub>mp</sub> (V)	31,44	31,66	31,89	32,10
Maximum Power Current I <sub>mp</sub> (A)	13,04	13,11	13,18	13,24
Open Circuit Voltage V <sub>oc</sub> (V)	37,35	37,50	37,64	37,77
Short Circuit Current I <sub>sc</sub> (A)	13,93	14,00	14,08	14,17
Module Efficiency	21,0%	21,3%	21,48%	21,67%
Maximum System Voltage	1500VCC			

Test Conditions: 1000W/m<sup>2</sup>, 25°C, AM =1,5



## Packaging Configuration

Modules per Container 40HQ	936 pcs
Pallets per Container 40HQ	26
Modules per Pallet	36
Pallet Dimensions	1750 x 1623 x 1190mm
Gross Weight per Pallet (kg)	794

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