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Solar Panel Guide
Specification Data Sheet

ILB Helios Group
NA S-Class 160-195
NA160W-PS

ILB HELIOS GROUP
PHOTOVOLTAICS

Quality criteria and certificates

- IEC 61215, IEC 61730, mechanical load test 5400 Pa and CE.
- Tolerance 0+5% nominal power (P_{MPP}); classification range is ±2.5W
- 10 years product-warranty.
- 5 years 95%; 12 years 90%; 18 years 85% and 25 years 80% performance warranty

Module Specifications

Type	NA160W-PS	NA165W-PS	NA170W-PS	NA175W-PS	NA180W-PS	NA185W-PS	NA190W-PS	NA195W-PS
Electrical Specification[1][2] (Standard test conditions irradiance 1000W/m²; module temperature 25°C; AM=1,5)								
Peak Power (P_{MPP})	160 W	165 W	170 W	175 W	180 W	185 W	190 W	195 W
Open Circuit Voltage (V_{OC})	28.15 V	28.62 V	28.70 V	28.90 V	29.00 W	29.50 V	29.70 W	29.90 W
Short Circuit Current (I_{SC})	7.78 A	7.88 A	8.0 A	8.10 A	8.19 A	8.26 A	8.38 A	8.44 A
Maximum Power Voltage (V_{MPP})	21.83 V	22.24 V	22.42 V	22.97 V	23.37 V	23.76 V	24.28 V	24.65 V
Maximum Power Current (I_{MPP})	7.33 A	7.42 A	7.58 A	7.62 A	7.70 A	7.79 A	7.83 A	7.91 A
Module Efficiency (active area)	13.70 %	14.13 %	14.55 %	14.98 %	15.41 %	15.84 %	16.27 %	16.70 %
No. of Diodes	3							
Maximum System Voltage	1000 VDC							
Working Temperature	-40°C to +85°C							
Storage Temperature	-40°C to +85°C							
Mechanical Characteristics								
Dimension (AxBxC) mm	1332 x 990 x 40 (± 2mm)							
Weight	15.7 kg							
Cable	Ø 4mm² ; length: 1000mm							
Connector	RADOX® SOLAR Twist Lock							
Container Capacity	**Multiple Packing** (22 Modules each box)				40 feet 616 pcs / 28 pallets			
Cell	Multi-Crystal 156 x 156 mm (Eff: 14.50% - 17.25%)							
No. of cells and connections	48 (6x8)							
Temperature/Coefficients								
NOCT	45C (±2°C)							
Temperature Coefficient V_{OC} (β2)	-0.2960 %/K (+/-0,0003 %/K)							
Temperature Coefficient I_{SC} (α2)	0,072 %/K (+/-0,004 %/K)							
Temperature Coefficient P_{MPP} (γ2)	-0.4510 %/K (+/-0.002 %/K)							

[1] The measurement uncertainty of P_{MPP} may vary by ±2.5% and all other ratings by ±10%
[2] The electrical data's are typical figures based on our production experience

IEC CE

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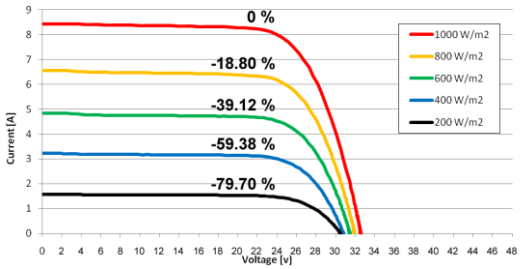
ILB Helios AG Switzerland / ILB Helios SA Spain | Series EN | Release 25-05-2011

Weak Light Specifications

NA-Poly Series Weak Light Power Reduction[1][2]	
Electrical Specification at STC-condition and AM 1.5	%
1000W/m²	0 %
800W/m²	-18.80 %
600W/m²	-39.12 %
400W/m²	-59.38 %
200W/m²	-79.70 %

NA-Poly Series Weak Light Power Reduction[1][2]
(I-V as a function of irradiance under STC- conditions)

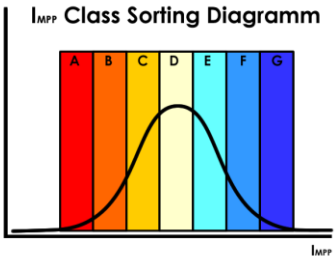


I_{MPP} Class Category

The ILB Helios I_{MPP} Class sorting is helping to reduce the "Array Mismatch Loss" (≤ 2%).

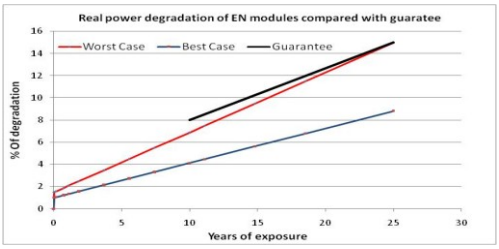
Every module is marked with a I_{MPP} class label according to the ILB Helios sorting method, which is a seven I_{MPP} class sorting system by using the I_{MPP} average ($\bar{x}$) and a static Δ I_{MPP} to generate the I_{MPP} max and I_{MPP} min for each I_{MPP} class.

To ensure an easy handling on the installation site, the boxes are marked with an IMPP Class tag.



I_{MPP} classes	Range
A	$\geq I_{MPP}\,\bar{x}$ +0,25A
B	$< I_{MPP}\,\bar{x}$ +0,25 A ↔ $\geq I_{MPP}\,\bar{x}$ +0,15A
C	$< I_{MPP}\,\bar{x}$ +0,15 A ↔ $\geq I_{MPP}\,\bar{x}$ +0,05A
D	$< I_{MPP}\,\bar{x}$ +0,05 A ↔ $\geq I_{MPP}\,\bar{x}$ -0,05A
E	$< I_{MPP}\,\bar{x}$ -0,05 A ↔ $\geq I_{MPP}\,\bar{x}$ -0,15A
F	$< I_{MPP}\,\bar{x}$ -0,15 A ↔ $\geq I_{MPP}\,\bar{x}$ -0,25A
G	$< I_{MPP}\,\bar{x}$ -0,25 A

Low Power Degradation



The way of manufacturing, the quality controls, the materials selected and the patented designs lead to a high quality and reliability module.

Real test measures in-field confirms a very low degradation over time. Left graph shows an extrapolation of real power degradation over time compared with our guarantee.

[1] The measurement uncertainty of P_{MPP} may vary by ±2.5% and all other ratings by ±10%
[2] The electrical data's are typical figures based on our production experience

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Materials

Our ILB Ensol Modules are manufactured only with well known proven materials of the highest quality.

Components	Description
Aluminum Frame	15 µm minimum anodized aluminum frame, with optimized moment of inertia-weight ratio provides very stable solution for mechanical loads up to 5400 Pa
Backside Cover (TÜV)	Provides a complete long-lasting protection and sealing against mechanical and environmental damages. High electrical insulation > 1000V
Cells	High conversion efficiency and stable cells, electrically matched for optimal module performance in kW/h. Low light and thermal induced degradation rate per year
Cable	Special 4mm2 UV and weather resistant solar cable
Connector	RADOX® SOLAR (Huber & Suhner); Easy connection, low oxidation, and with a long lifetime
Diodes	Fast response surface mount Schottky diodes. Low thermal resistance at high currents
Encapsulant Film	Special formulation EVA provides excellent photo-thermal stability and UV radiation resistance. Optimal cross linking data and processing performance with long term stability
Front Glass	High transmission low iron 3,2mm fully tempered safety glass, ultra-clear
Interconnect and Buss-bar Ribbons	Low resistance ribbons
Junction Box (TÜV)	IP 67 water proved form Huber & Suhner
Sealant	Weather and temperature resistant silicon with high flexibility properties that provide excellent resistance to mechanical and thermal fatigue

Recycling Information

Component	Short-cut	Name
Glass	SiO_2	Silicon Dioxide
Cells	c-Si / mc-Si	Monocrystalline-/ Multicrystalline Silicon
	Ag	Silver
	Pd	Palladium
	Ti	Titanium
	Si	Silicon
	AL	Aluminum
Bus bar- / Interconnection-Tab	Cu	Copper
	Sn / Pb / Ag	Tin / Lead / Silver
EVA Film	EVA	Ethylene-Vinyl Acetate
Back Sheet Cover	PET	Polyethylene Terephthalate
	PVF	Polyvinyl Fluoride
Frame	AL	Aluminum
Silicon	TMS	Trimethylsilyl
	Propyl	Propyl (Propyl Ethanoate)
	en	Ethylenediamine
Junction Box; Connectors; Cable	PPO	Polyphenylenoxid
	TPE/PA	Thermoplastic elastomers
	Cu (Sn / Pb)	Copper (Tin / Lead)
Potting Material	PDMS	Polydimethylsiloxane

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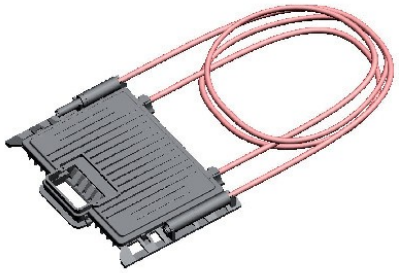
Huber+Suhner Junction Box

Technical Data

IEC 61215 2nd ed and IEC 61730 1st ed

Dimension	201 x 141 x 19.7 mm
Rated current	14 A
Test current*	17.5 A
Nominal voltage	≤ 35 V
Rated voltage	1000 V DC
Rated impulse voltage	8kV
Protection type**	IP 67
Overvoltage category	III
Safety class	Class II
Flame-retardant	V-0/5V
Flat cable	3-6 mm
Operating temperature range	-40°C to +110°C
Schottky diodes	3

* according to IEC61215
**max 1.0m/30min



Advantage Huber+Suhner Junction Box

The HA- solar junction box family is designed for high performance modules. Thanks to the unique design the module is protected from the occurring temperature increase in reverse mode. The thermal separation between the junction box and the module ensures high performance over the whole lifetime of the system (patent pending).

- Top Performance over live time
- Reliable, flat design
- Excellent heat dissipation (away from the module)
- designed according to the new IEC 61215 and 61730 requirements
- Fixation for connectors on the housing
- Maintenance free during the complete life cycle
- Recognized brand name for high quality
- Schottky diodes

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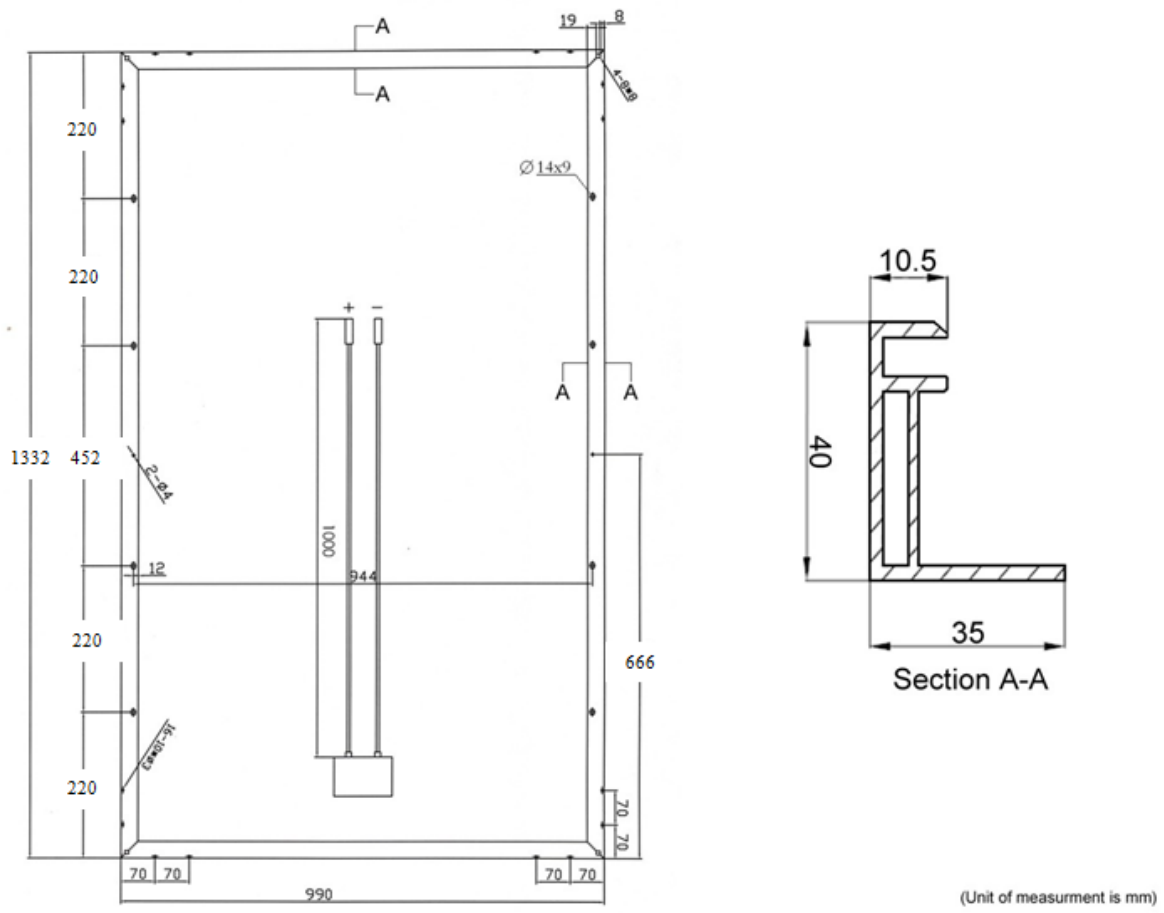
Dimensions

NA180W-PS to NA215W-PS



(Unit of measurment is mm)

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