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Solar Panel Guide
Specification Data Sheet

ILB Helios Group
NA E-Class 245-310
NA275WP72-156/J

ILB HELIOS GROUP
PHOTOVOLTAICS

Quality criteria and certificates

- IEC 61215, IEC 61730, CE-Certification, ISO 9001 and ILB-ISO 14001
- Tolerance of nominal power (P_{MPP}) 0+5%; classification range is ±2.5W
- 10 years product-warranty
- 5 years 95%; 12 years 90%; 18 years 85% and 25 years 80% performance warranty
- TÜV certified for weight load up to 5400Pa

Type	NA245W-P72-156/J	NA250W-P72-156/J	NA255W-P72-156/J	NA260W-P72-156/J	NA265W-P72-156/J	NA270W-P72-156/J	NA275W-P72-156/J
Electrical Specification[1][2] (Standard test conditions emittance 1000W/m²; module temperature 25°C; AM=1,5)							
Peak Power (P_{MPP})	245 W	250 W	255 W	260 W	265 W	270 W	275 W
Open Circuit Voltage (V_{OC})	42.00 V	42.40 V	42.40 V	42.60 V	42.60 V	43.00 V	43.00 V
Short Circuit Current (I_{SC})	7.84 A	7.93 A	8.09 A	8.20 A	8.36 A	8.45 A	8.60 A
Maximum Power Voltage (V_{MPP})	35.00 V	35.30 V	35.30 V	35.50 V	35.50 V	35.80 V	35.80 V
Maximum Power Current (I_{MPP})	7.00 A	7.08 A	7.22 A	7.32 A	7.46 A	7.54A	7.68A
Module Efficiency	12.62 %	12.88 %	13.14 %	13.39 %	13.65 %	13.91 %	14.17 %

Type	NA280W-P72-156/J	NA285W-P72-156/J	NA290W-P72-156/J	NA295W-P72-156/J	NA300W-P72-156/J	*NA305W-P72-156/J	*NA310W-P72-156/J
Electrical Specification[1][2] (Standard test conditions emittance 1000W/m²; module temperature 25°C; AM=1,5)							
Peak Power (P_{MPP})	280 W	285 W	290 W	295 W	300 W	305 W	310 W
Open Circuit Voltage (V_{OC})	43.20 V	43.20 V	43.60 V	43.60 V	43.80 V	43.80 V	44.20 V
Short Circuit Current (I_{SC})	8.72 A	8.89 A	8.98 A	9.16 A	9.25 A	9.40 A	9.48 A
Maximum Power Voltage (V_{MPP})	36.00 V	36.00 V	36.30 V	36.30 V	36.50 V	36.50 V	36.80 V
Maximum Power Current (I_{MPP})	7.78 A	7.92 A	8.00 A	8.13 A	8.22 A	8.36 A	8.42 A
Module Efficiency	14.42 %	14.68 %	14.94 %	15.20 %	15.45 %	15.72 %	15.99 %

Module Characteristic

General Characteristics		
No. of Diodes	3	
Maximum System Voltage	1000 VDC	
Maximum System Current	15 A	
Limiting Reverse Current (I_R)	20.25 A	
Application Class	A	
Fire Rating	C	
Array mismatch loss	≤ 2%	
Working Temperature	-40°C to +85°C	
Storage Temperature	-40°C to +85°C	
Mechanical Characteristics		
Dimension (AxBxC)	1956x992x50mm (tolerance ±2mm)	
Weight	21.5 kg	
Cable	Ø 4mm² ; length: 1000mm	
Connector	RADOX® SOLAR Twist Lock	
Container Capacity	**Multiple Packing**	40 feet 552 pcs / 24 pallets
Cell	Poly Crystalline 156 x 156mm	
No. of cells and connections	72 (6x12)	
Temperature/Coefficients		
NOCT	45 °C (±2°C)	
Temperature Coefficient V_{OC} (β2)	-0.32 %/K	
Temperature Coefficient I_{SC} (α2)	0.047 %/K	
Temperature Coefficient P_{MPP} (γ2)	-0.45 %/K	

[1] The measurement uncertainty of P_{MPP} may vary by ±3% and all other ratings by ±10%
[2] The electrical data's are typical figures based on our production experience
* TÜV test has been successful passed. The certificate will be distributed in May.

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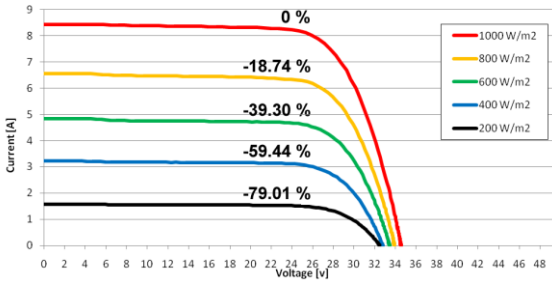
Weak Light Specifications

NA-Poly Series Weak Light Power Reduction[1][2]	
Electrical Specification at STC-condition and AM 1.5	%
1000W/m²	0 %
800W/m²	-18,74 %
600W/m²	-39,30 %
400W/m²	-59,44 %
200W/m²	-79,01 %

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



Type	NA245W-P72-156/J	NA250W-P72-156/J	NA255W-P72-156/J	NA260W-P72-156/J	NA265W-P72-156/J	NA270W-P72-156/J	NA275W-P72-156/J
Electrical Specification[1][2] (Emittance 1000W/m²; module temperature 25°C; AM=1,5)							
Peak Power (P_{MPP})	199.09 W	203.15 W	207.21 W	211.28 W	215.34 W	219.40 W	223.47 W
Open Circuit Voltage (V_{OC})	38.06 V	38.42 V	38.43 V	38.61 V	38.60 V	38.97 V	38.97 V
Short Circuit Current (I_{SC})	7.11 A	7.18 A	7.33 A	7.43 A	7.58 A	7.66 A	7.79 A
Maximum Power Voltage (V_{MPP})	31.72 V	31.99 V	31.99 V	32.17 V	32.17 V	32.45 V	32.45 V
Maximum Power Current (I_{MPP})	6.28 A	6.35 A	6.48 A	6.56 A	6.69 A	6.76 A	6.89 A

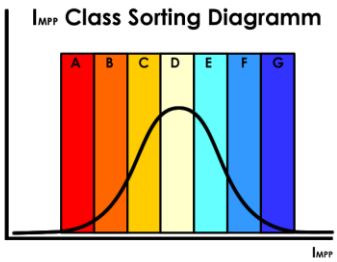
Type	NA280W-P72-156/J	NA285W-P72-156/J	NA290W-P72-156/J	NA295W-P72-156/J	NA300W-P72-156/J	*NA305W-P72-156/J	*NA310W-P72-156/J
Electrical Specification[1][2] (Emittance 1000W/m²; module temperature 25°C; AM=1,5)							
Peak Power (P_{MPP})	227.53 W	231.59 W	235.65 W	239.72 W	243.78 W	247.84 W	251.91 W
Open Circuit Voltage (V_{OC})	39.15 V	39.15 V	39.51 V	39.51 V	39.70 V	39.70 V	40.06 V
Short Circuit Current (I_{SC})	7.90 A	8.06 A	8.14 A	8.30 A	8.38 A	8.52 A	8.59 A
Maximum Power Voltage (V_{MPP})	32.62 V	32.62 V	32.90 V	32.90 V	33.08 V	33.08 V	33.35 V
Maximum Power Current (I_{MPP})	6.97 A	7.10 A	7.16 A	7.29 A	7.37 A	7.49 A	7.55 A

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 ($\overline{x}$) 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	≥ I_{MPP} $\overline{x}$ +0,25A
B	< I_{MPP} $\overline{x}$ +0,25 A ↔ ≥ I_{MPP} $\overline{x}$ +0,15A
C	< I_{MPP} $\overline{x}$ +0,15 A ↔ ≥ I_{MPP} $\overline{x}$ +0,05A
D	< I_{MPP} $\overline{x}$ +0,05 A ↔ ≥ I_{MPP} $\overline{x}$ -0,05A
E	< I_{MPP} $\overline{x}$ -0,05 A ↔ ≥ I_{MPP} $\overline{x}$ -0,15A
F	< I_{MPP} $\overline{x}$ -0,15 A ↔ ≥ I_{MPP} $\overline{x}$ -0,25A
G	< I_{MPP} $\overline{x}$ -0,25 A

[1] The measurement uncertainty of P_{MPP} may vary by ±3% 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 Helios-Modules are manufactured only with top material on the highest technology standards.

ILB Helios uses only the best supplier, qualified, and approved materials to make sure that we can guarantee the highest performance and the longest life time.

Components	Product	Remarks
Aluminum Frame	Very stable, anodized Alu frame	With finite elements optimized, very stabile solution for high resistance and mechanical loads up to 5400 Pa
Backside Cover (TÜV)	Weather resistant and over 1000V approved	Very long life time
Cells	Very stabile, high output poly cells	According ILB internal specifications for a high performance output in kW/h and low degradation rate per year
Cable	Special 4mm2 UV and weather resistant solar cable	Switzerland
Connector	RADOX® SOLAR (Huber & Suhner)	Easy connection, low oxidation, and with a long lifetime
Diodes	Very resistant diodes	EU / USA
EVA Film	Optimal cross linking data and processing performance with long term stability	For the best long term reliability
Front Glass	3,2mm, tempered, low iron solar glass	Very high light transmission
Interconnecting and Buss Ribbon	Low resistance ribbons	European product
Junction Box (TÜV)	IP 67 water proved form Huber & Suhner	Switzerland
Silicon	Weather and temperature resistant silicon	Optimal sealing and long life time

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

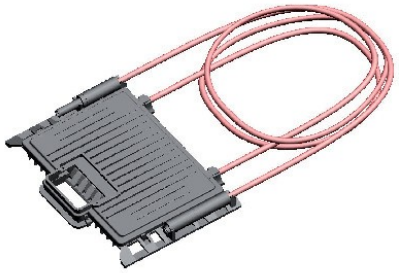
Huber+Suhner Junction Box

Technical Data

IEC 61215 2nd ed and IEC 61730 1st ed

Dimension	201 x 141 x 19.7 mm
Rated current	16 A
Test current*	20 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

ILB Helios AG Switzerland / ILB Helios SA Spain | Series NA | Release 25-05-2011-J/E

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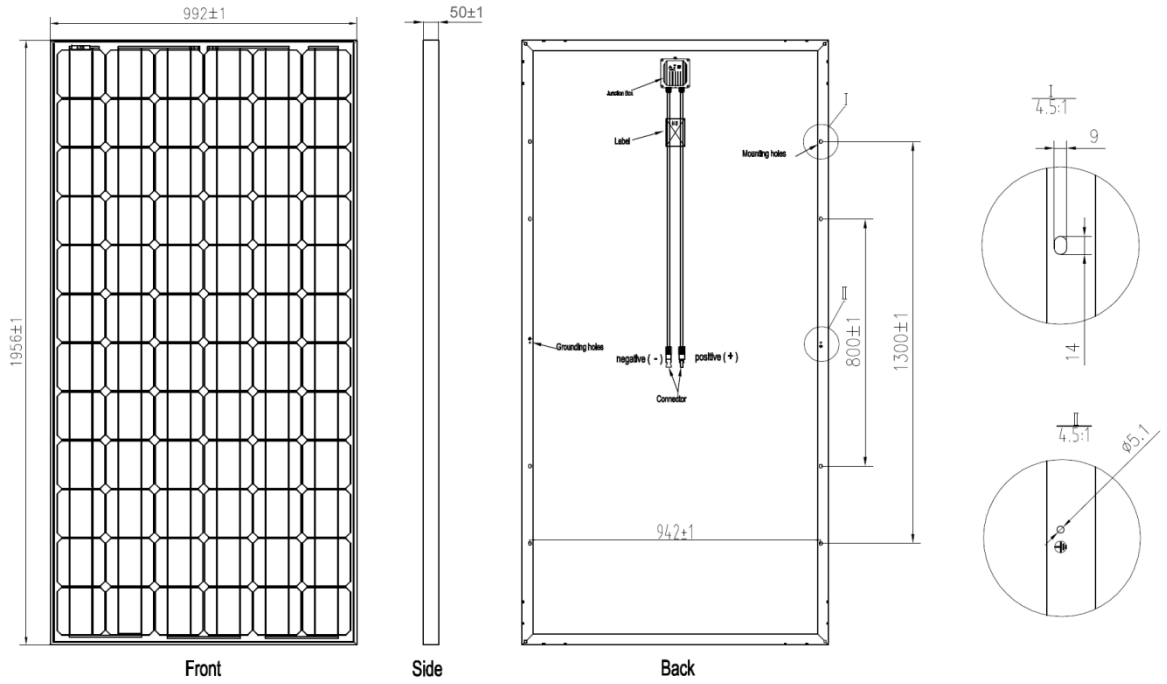
Dimensions

NA245W-P72-156/J to NA310W-P72-156/J



(Unit of measurement is mm)

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