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DATASHEET
HELIOWING 5

2025-05

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INTRODUCTION
HELIOWING 5

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The HelioWing series is a modular, flexible solar power plant solution for commercial and residential applications. A HelioWing will not only enable you to produce your own energy, but make parking and charging your car a charm. Integrated LEDs with motion sensors guide you in the dark until you are in the perfect parking position.Thanks to our integrated battery pack, you can store your valuable, green energy in the HelioWing itself or use it right away to charge your EV. All autonomously and independent either grid connected or off-grid. Store up to 24 kWh with the integrated battery pack. HelioWing is a standalone system and does not require any specific spatial circumstances to be set up. The easy installation allows placement in tight spaces to make the most out of your valuable real estate whereas the durable and sturdy construction allows for placement in wide, open spaces to withstand high winds and weather. The HelioWing 5 is our model for smaller spaces, with a solar array of 22' 7" in width by 17' 0" in depth at 11' 0" entry height. It holds 18 x 410 W bifacial 108 half-cell modules with 7.38 kWp of solar PV power.

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SPECIFICATIONS
HELIOWING 5

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GENERAL	
Shelve Temperature	-20°C / -4°F – 50°C / 122°F
Operation Ambient Temperature	-25°C / -13°F – 50°C/ 122°F
Humidity	5% ~ 95% (RH) No Condensation
Altitude	<13120ft (inverter), 10000ft (battery)
Communication	▪ WiFi ▪ GSM (4G SIM card) ▪ Cloud monitoring and programming
Installation Modes (Up to 6 units parallel)	▪ Single unit, off-grid ▪ Single unit, off grid w/ generator ▪ Single unit, grid tied
Warranty – Structure	20 years
Warranty – Electric system	10 years
Warranty – PV modules	min. 87,8% capacity after 20 years
Warranty – EV Charger	3 years
STRUCTURE	
Material, Main Structure	Steel (50 KSI), powder coated
Material, Column Covers	Steel, powder coated (Configurable color)
Standards	Engineered to IBC / ASCE 7-16
Max. Ground snow load	50 psf ground snow (@100 mph wind speed)
Max. Wind speed	150 mph wind speed (@20 psf ground snow)
Seismic Category	D
Saltwater Spray tested	1000h +
Mounting Types	▪ Mounted to a foundation ▪ Mounted to an existing structure
FOUNDATION	
Foundation Types	▪ Concrete pile foundation ▪ Concrete spread foot foundation ▪ Helical pile foundation
PV SYSTEM	
Number of PV Panels	18
Rated PV Power	7.38 kWp
Open Circuit Voltage per MPPT	334.80 VDC
CEC Efficiency	96.5 %

LIGHTING	
Power Supply	24 VDC, 350 W, MeanWell
Column	4x 84" Industrial grade LED-strip lights
Wing	2x 48" Industrial grade LED-strip lights
ELECTRIC SYSTEM	
Voltage	120/240V Split-Phase
AC Output (Grid)	47.5A / 11.4kW
AC Output (Backup / Off-Grid)	47.5A / 11.4kW
AC Input (Grid)	71.3A / 17.1kW
Self Consumption	▪ Inverter: 20 W ▪ Battery Heating: 600 W (When in use) ▪ Column Ventilation: 9,6 W ▪ Lighting: 220 W (When in use) ▪ EV-Charger: 30 W
Operation Modes	▪ Off-grid ▪ Off-grid with generator ▪ Smart load ▪ Sell back (grid tied) ▪ Sell back, household limited (grid tied) ▪ Meter zero (grid tied) ▪ Time of use (grid tied) ▪ Peak shaving (grid tied)
BATTERY	
Storage Capacity	36kWh
Nominal Voltage	358.4V
Charging Voltage	392V – 408V
Charging Cycles	6000+ (>80% capacity)
SHIPPING	
Crate Dimensions (L x W x H)	13' 6" x 3' 8" x 3' 8"
Shipping Crate Weight	▪ Main structure + Crate: 5300lbs ▪ Inverter: 120lbs ▪ Battery: 700lbs ▪ EV charger: 30lbs ▪ Light kit: 20lbs
Weight PV Panels	880lbs

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MEASUREMENTS
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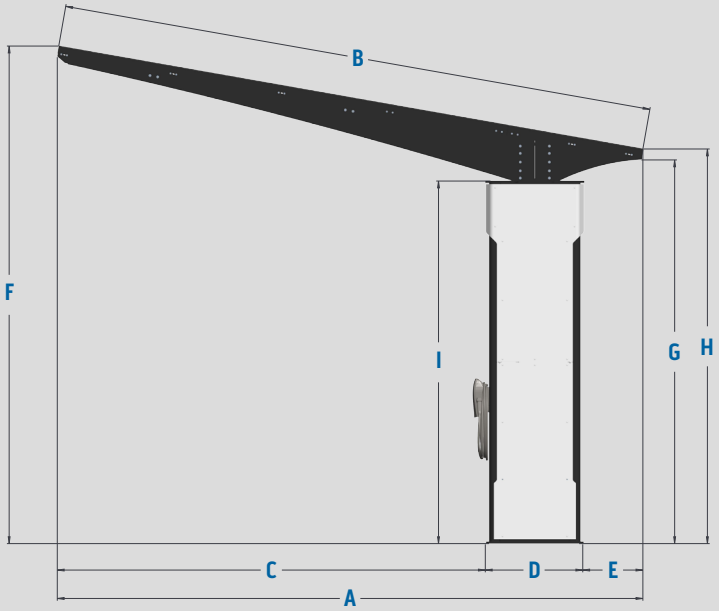
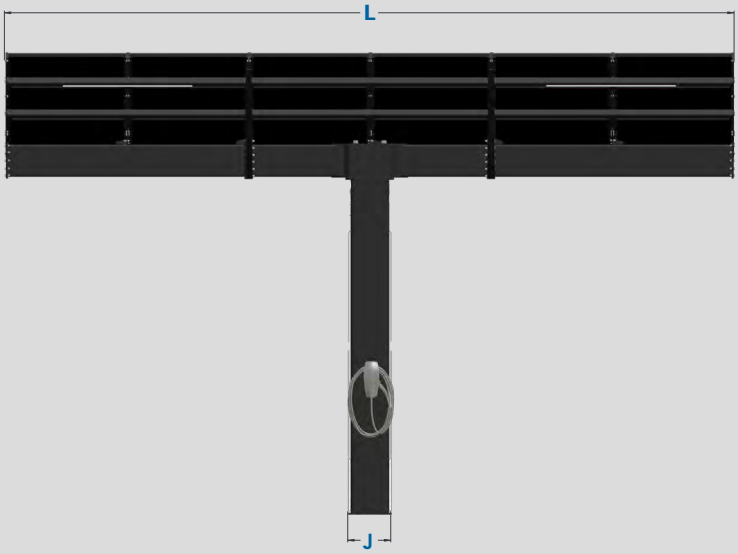
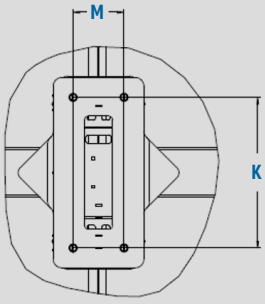
Roof area	**384 sq ft**
Roof inclination	**10°, fixed**
Covered depth **A**	**16' 10"**
Solar array length **B**	**17' 0"**
Overhang column to eaves **C**	**12' 4**
Column depth **D**	**2' 10"**
Overhang column to ridge **E**	**1' 9"**
Ridge height with flush foundation **F**	**14' 4"**
Entry height with flush foundation **G**	**11' 0"**
Eaves height with flush foundation **H**	**11' 4"**
Crossbeam hight with flush foundation **I**	**10' 5"**



Covered width **L**	**22' 7"**
Column width **J**	**1' 4"**
Mounting hole pattern [**M** x **K**]	**9" x 26.6"**





CAD-Data is available upon request in different formats.

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OVERVIEW COMPONENTS
HELIOWING 5

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S6-EH1P 11.4K-H-US
INVERTER

The ultra-efficient Solis 11.4k inverter is perfectly suited for our system, both in size and functionality. It enables seamless integration of an external generator alongside PV, compatibility with the HelioWing battery, and grid-tied operations, including easy meter integration for selling energy back to the grid. It also connects to the World4Solar platform via web or mobile app for convenient monitoring, control, and servicing.

FEATURES

Topology Design	**Transformerless**
Back-up switch time	**<10 ms**
Max. allowable phase imbalance	**100%**
UPS switching	**Automatic**
300ms surge power back up overload capacity	**Up to 170% (130A) (supports industral HVAC systems)**
Optimization, module-level monitoring and rapid shutdown	**Yes**
BYPASS switch available	**Yes**
UL 9540 certified with World4Solar battery system	**Yes**
Fully integrated in the World4Solar platform	**Yes**
Fully integrated in the HelioWing E-Stop system	**Yes**
Intelligent AC coupling scheme	**Yes**
Whole-home backup and generator integration	**Yes**
Load shading function	**Yes (with an external SolisHub)**

COMPLIANCE & PROTECTIONS

Compliance	**UL 1741, UL 1741 SA, UL 1741 SB, IEEE1547-2018&2020, UL 1699B, UL 1998,California Rule 21, NEC 690.12-2020, CAN/CSA C22.2107.1-1, FCC Part 15 Class B**
Ground fault detection	**Integrated**
Residual (leakage) current detection	**Integrated**
AFCI (DC arc-fault circuit protection)	**Integrated**
DC reverse-polarity protection (PV only)	**Integrated**
Manual inverter bypass switch	**Integrated**
Protection class / Over voltage category	**Class I / Class II**

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BATTERY

The Battery Energy Storage System (B.E.S.S.) is a part of the World4Solar ecosystem. It's designed to maximize storage capacity for our HelioWing system with 36kWh and further enhances the system's modularity due to its broad compatibility with other components. By meeting all the sophisticated requirements of the HelioWing, the B.E.S.S. delivers unparalleled efficiency in terms of the size-to-storage ratio and also integrates seamlessly with the sleek design of the HelioWing itself. The batteries are extremely resilient and capable of withstanding the toughest conditions, to offer a longer service lifespan than competitive solutions.

BMS SPECIFICATIONS

Communication	**RS485 / CAN**
Protection	**Temperature, over charge, under-voltage, over-current, short circuit, input for aux. E-Stop**
Control & Monitoring	**via World4Solar App**
Auxilary power output	**24VDC / 14.6A**
IP Outdoor Rating - BMS	**IP54** **

GENERAL SPECIFICATIONS

Battery Type	**LFP (LiFePO4)**
Charging Cycles	**5000+**
Max. Charge / Discharge Current	**75A / 26.88kW (Continuous Use)**
Recom. Charge / Discharge Current	**50A / 17.92kW (Continuous Use)**
Default SOC control	**95% to 5% (90% to 10% recommended)**
Communication Port	**CAN / RS485 / Wifi**
Storage Temperature	**-4°F – 122°F / -20°C – 50°C**
Saltwater Spray Tested	**1000h +**
Operating Humidity	**0 to 95% RH**
Operating Altitude	**< 9000ft / 3000m**
IP Outdoor Rating - Battery	**IP67** *
Compliance	**UL9540A, CEC, UL1973, CE-EMC, CB62619, IEC62040, IEC63056, VDE2510**
Warranty	**5 years (extendable to 10 years)**

* Indicates total protection against dust ingress and protection against immersion in water between 15 centimeters and 1 meter in depth for 30 minutes.

** Indicates protection against dust limited ingress (no harmful deposit) and protection against water splashed from all directions - limited ingress permitted.

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APTOS DNA-108-BF10
PV MODULES

Designed and engineered in Silicon Valley – The high-end, bi-facial modules from Aptos are the perfect fit in terms of power capacitiy, durability and esthetics.

MECHANICAL PROPERTIES

Cell Type	**Monocrystalline**
Glass	**0.126“, anti-reflection coating, high transmission, low iron, tempered glass**
Frame	**Anodized Aluminum Alloy**
Junction Box	**IP68**
Dimensions	**67.7“ x 44.6“ x 1.3“**
Weight	**48.5 lbs**

TEST OPERATING CONDITIONS

Maximum Load Capacity (Per UL 1703)	**5400 PA Snow Load / 5400 PA Wind Load**
Fire Performance Class	**Class C / Type 1, 2**

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TESLA GEN 3 WALL CONNECTOR
EV CHARGER

The Wall Connector is the most convenient charging solution on the market. Thanks to its efficiency, WiFI connectivity and elegant design, it complements the HelioWing not only in functionality, but also in aesthetics.

Cable Length	**24'**
Ground Fault Circuit Interrupter	**Integrated, no additional required (CCID20)**
Wi-Fi	**2.4 GHz, 802.11b/g/n**
Agency Approvals	**cULus - E351001**
Power Output	**7,6 kW**

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STRUCTURE

High strength steel (50 KSI). A HelioWing comes with a pre-approved permitting packet including structure, foundation and the preassembled electrical system from independent civil engineering offices. All components (inverter, battery, light control system, AC connection box) are protected from the elements inside the structure. All cables including the solar panel junction boxes and cables are routed to be covered and protected in order to maintain a clean look from any perspective. Additional space is provided to add power optimizers and/or RSD devices, if needed.

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FOUNDATION INSTALLATION
HELIOWING 5

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CONCRETE PILE FOUNDATION

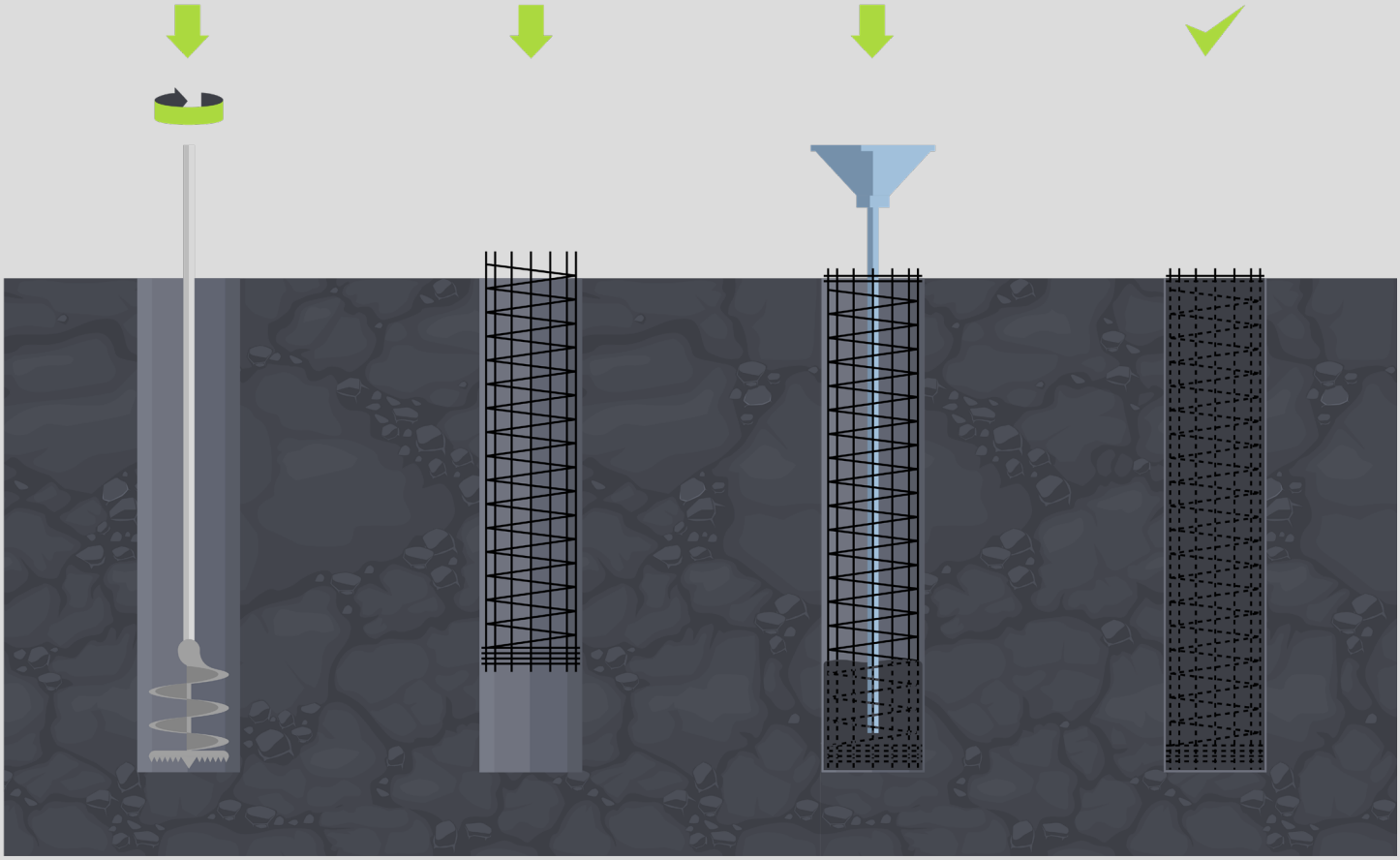
ONE DAY

STAGE 1
Drilling to Calculated Depth

STAGE 2
Insert Rebar, Anchor Bolts, Conduit and Grounding Rod

STAGE 3
Cast Concrete

STAGE 4
Finished Foundation



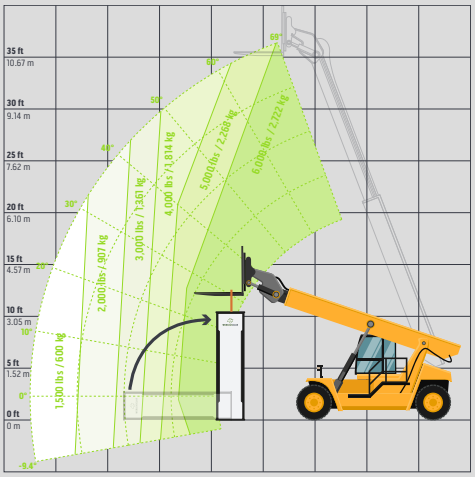
ERECTING THE HELIOWING WITH REACH-FORKLIFT

The HelioWing is designed to be installed with a wide variety of different lifting equipment, e.g. **telescopic forklift, truck mounted crane, mobile crane, spider crane, excavator** or others.

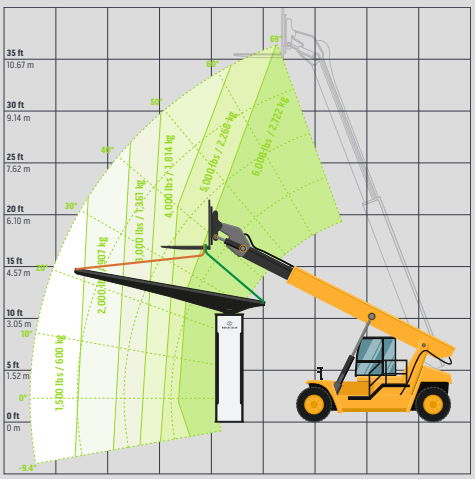
The following table shows the min. parameter for the individual lifts during the installation process:

Lift scenario	Req. Capacity	Horizontal Reach	Vertical Reach	Chain 1	Chain 2
Column installation	1500 lbs	Min. 12‘	Min. 15‘	Min. 20“	-
HW5 Wing installation – rear					
HW5 Wing installation – front	5000 lbs	Min. 12‘	Min. 24‘	Min. 14‘	Chain 17‘
HW5 Wing installation – side					

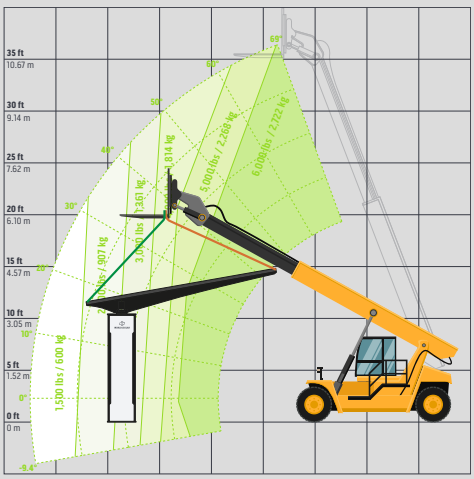
Column installation



HW5 Wing installation – rear



HW5 Wing installation – front



HW5 Wing installation – side