HELIENE

# 144HC M10 NTYP SL Bifacial Module

**144 Half-Cut Monocrystalline 555W – 585W**

## 22.64%

Utilizes the latest M10 size super high efficiency N-type silicon solar cells. Half cut design further reduces cell to module (CTM) losses.

## Stability & Looks

Enhanced frame design to withstand higher wind, snow, and other mechanical stresses. Framed Glass–Backsheet aesthetic is ideal for high visibility installation.

## High Energy Yield

Highest efficiency, Excellent Bifaciality & Low temperature coefficient of N-type Silicon Solar Cells enable High Energy yield

## High Reliability

N-type silicon solar cells result in low LID, reducing annual degradation and guaranteeing more power throughout the lifetime.

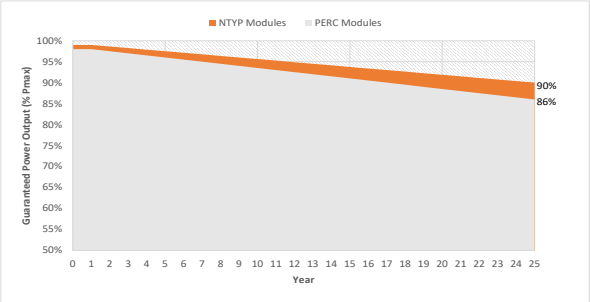
**Highly efficient N-type Silicon Solar Cells**

**Low LCOE enabled by High Power Output & Low BOS Cost**

**1% First year degradation & 0.4% Annual Power degradation**

## No Compromise Guarantee

**15 Year Product Warranty**
**25 Year Linear Performance Guarantee**




### World-class Quality

- Heliene's fully automated manufacturing facilities with state-of-the-art robotics and computer aided inspection systems ensure the highest level of product quality and consistency
- All manufacturing locations are compliant with international quality standards and are ISO 9001 certified
- Heliene modules have received Top Performer rankings in several categories from PV Evolution Labs (PV EL) independent quality evaluations

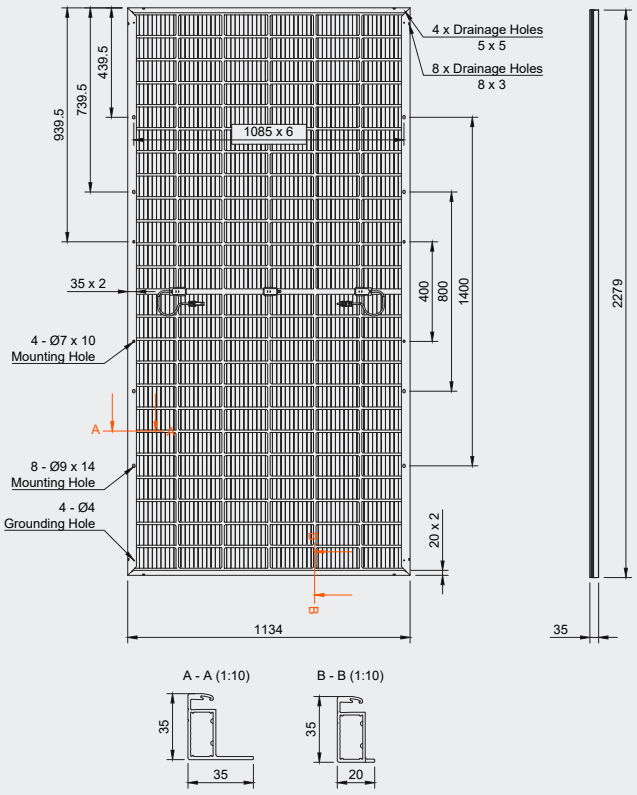
### Bankable Reputation

- Established in 2010, Heliene is recognized as highly bankable Tier 1 manufacturer of solar modules and has been approved for use by the U.S. Department of Defense, U.S. Army Corps of Engineers and from numerous top tier utility scale project debt providers
- By investing heavily in research and development, Heliene has been able to stay on the cutting edge of advances in module technology and manufacturing efficiency

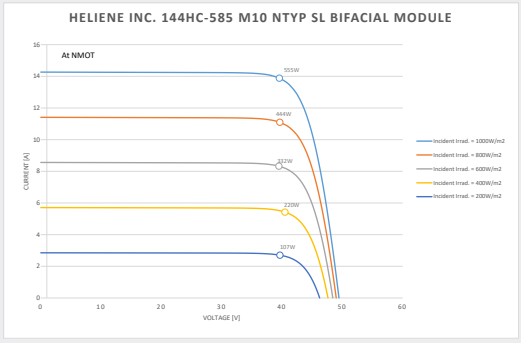
### Local Sales, Service, and Support

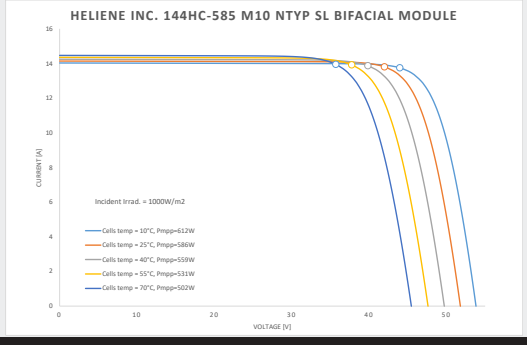
- With sales offices across the U.S. and Canada, Heliene prides itself on unsurpassed customer support for our clients. Heliene has become the brand of choice for many of the leading residential installers, developers and Independent Power Producers due to our innovative technology, product customization capability and just in time last-mile logistics support
- Local sales and customer support means answered phone calls and immediate answers to your technical and logistics questions. We understand your project schedules often change with little warning and endeavor to work with you to solve your project management challenges

## Dimensions for 144HC M10 NTYP SL Bifacial Series Modules




## I-V Curves for 144HC M10 NTYP SL Bifacial Series Modules




## Electrical Data (STC)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Peak Rated Power* | $P_{mpp}$ (W) | 585 | 580 | 575 | 570 | 565 | 560 | 555 |
| Maximum Power Voltage | $V_{mpp}$ (V) | 43.81 | 43.62 | 43.37 | 43.13 | 42.88 | 42.63 | 42.39 |
| Maximum Power Current | $I_{mpp}$ (A) | 13.36 | 13.32 | 13.28 | 13.24 | 13.20 | 13.16 | 13.12 |
| Open Circuit Voltage* | $V_{oc}$ (V) | 51.79 | 51.65 | 51.51 | 51.37 | 51.24 | 51.09 | 50.95 |
| Short Circuit Current** | $I_{sc}$ (A) | 14.14 | 14.10 | 14.06 | 14.02 | 13.99 | 13.95 | 13.91 |
| Module Efficiency | Eff (%) | 22.64 | 22.44 | 22.25 | 22.06 | 21.86 | 21.67 | 21.48 |
| Maximum Series Fuse Rating | MF (A) | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Power Sorting Range | | [- 0/+3%] | | | | | | |
| Bifaciality Factor*** | | 80 ± 5% | | | | | | |

STC - Standard Test Conditions: Irradiation 1000 W/m² - Air mass AM 1.5 - Cell temperature 25 ºC,
*$P_{mpp}$ Production Tolerance ± 3%, $V_{oc}$ Production Tolerance ± 3%, **$I_{sc}$ Production Tolerance ± 4%
***Bifaciality Factor= $Pmpp_{rear}$/$Pmpp_{front}$ where $Pmpp_{rear}$ and $Pmpp_{front}$ are tested at STC

## Electrical Data (NMOT)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Maximum Power | $P_{mpp}$ (W) | 444 | 440 | 437 | 433 | 429 | 425 | 421 |
| Maximum Power Voltage | $V_{mpp}$ (V) | 41.95 | 41.77 | 41.53 | 41.30 | 41.06 | 40.82 | 40.59 |
| Maximum Power Current | $I_{mpp}$ (A) | 10.59 | 10.54 | 10.51 | 10.48 | 10.45 | 10.42 | 10.38 |
| Open Circuit Voltage | $V_{oc}$ (V) | 49.59 | 49.45 | 49.32 | 49.19 | 49.06 | 48.92 | 48.78 |
| Short Circuit Current | $I_{sc}$ (A) | 11.40 | 11.37 | 11.33 | 11.30 | 11.28 | 11.25 | 11.21 |

NMOT - Nominal Module Operating Temperature:
Irradiance at 800W/m², Ambient Temperature 20°C, Wind speed 1m/s

## Mechanical Data

| | |
|---|---|
| Solar Cells | 144 Half Cut, M10, 182mm, N-type Cells |
| Module Construction | Framed Glass–Backsheet |
| Backsheet | Transparent Backsheet with White Pattern |
| Dimensions (L x W x D) | 2279 x 1134 x 35 mm (89.72 x 44.65 x 1.38 inch) |
| Weight | 29.2 kg (64.3 lbs) |
| Frame | Double Webbed 15-Micron Anodized Aluminum Alloy |
| Glass | 3.2mm Low-Iron Content, High-Transmission, PV Solar Glass with Anti Reflective Coating |
| Junction Box | IP-68 rated with 3 bypass diodes |
| Output Cables | 4mm² (12 AWG), 0.3-meter Symmetrical Cables |
| Connectors | Multi-Contact/ Stäubli MC4 |

## Certifications

| | |
|---|---|
| UL Certification | UL61215, UL61730 pending |

## Temperature Ratings

| | |
|---|---|
| Nominal Module Operating Temperature (NMOT) | +42°C (±2°C) |
| Temperature Coefficient of $P_{max}$ | -0.30%/°C |
| Temperature Coefficient of $V_{oc}$ | -0.25%/°C |
| Temperature Coefficient of $I_{sc}$ | 0.045%/°C |

## Maximum Ratings

| | |
|---|---|
| Operational Temperature | -40°C to +85°C |
| Max System Voltage | 1500V |
| Mech. Load Test (Front) | 113 psf / 5400 Pa |
| Mech. Load Test (Back) | 50 psf / 2400 Pa |
| Fire Type | Type 1 |

## Warranty

| |
|---|
| 15 Year Product Warranty |
| 25 Year Linear Power Guarantee |

## Packaging Configuration

| | |
|---|---|
| Modules per Pallet 40' Container: | 31 pieces |
| Modules per 40' Container: | 620 pieces |
| Modules per Pallet 53' Trailer: | 28 pieces |
| Modules per 53' Trailer: | 644 pieces |



The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the ongoing innovation and product enhancements. Heliene Inc. reserves the right to make necessary adjustment to the information described herein at any time without prior notice. PV modules should be handled and installed only by qualified people. Please carefully read safety and installation instructions available for download from Heliene website before using Heliene PV modules. For warranty details, please refer to Product Warranty Document, also available for download from Heliene website.