

# Mars Series Half cell Modules

# CSUN 455-144M

High efficiency PERC tech for esthetic applications

Module Fire Performance: Type 1 (UL 1703)

Fire Resistance Rating: Class C (IEC 61730)

CSUN455-144M

CSUN450-144M

CSUN445-144M

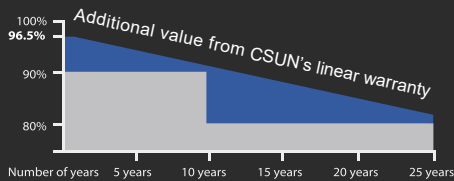
CSUN440-144M

CSUN435-144M

The power output shall not be less than 96.5% of the minimum power output stated in the product data sheet in the first year of the product's life cycle. The loss of power output shall not exceed 0.7% per year thereafter, ending with 80.18% in the 25th year.

■ CSUN    ■ Standard warranty

CSUN's NEW linear performance warranty



## 20.90%

Module efficiency

## 455W

Highest power output

## 10 Year

Material & workmanship warranty

## 25 Year

Linear power output warranty



Industry leading conversion efficiency



Certificated to withstand wind (2400 Pa) and snow load (5400 Pa)



Positive tolerance offer



Excellent performance under weak light condition



Passed salt mist & ammonia corrosion, blowing sand and hail testing



Good temperature coefficient enables better output in hot climates

**Munich RE**  
Munich Re providing Re in surance



All rights reserved by JSM  
Version 1/2020

All information and data are subject to change without notice and are provided without liability.

## Electrical Characteristics at Standard Test Conditions (STC)

Module Type	CSUN435-144M	CSUN440-144M	CSUN445-144M	CSUN450-144M	CSUN455-144M
Maximum Power - P <sub>mpp</sub> (W)	435	440	445	450	455
Positive Power Tolerance	0~5W	0~5W	0~5W	0~5W	0~5W
Open Circuit Voltage - Voc (V)	48.30	48.50	48.70	48.90	49.10
Short Circuit Current - I <sub>sc</sub> (A)	11.40	11.46	11.53	11.60	11.66
Maximum Power Voltage - V <sub>mpp</sub> (V)	40.90	41.10	41.30	41.50	41.70
Maximum Power Current - I <sub>mpp</sub> (A)	10.64	10.71	10.78	10.85	10.92
Module Efficiency	20.0%	20.2%	20.5%	20.7%	20.9%

Electrical data relates to standard test conditions (STC) : irradiance 1000W/m<sup>2</sup> ; AM 1.5 ; cell temperature 25°C measuring uncertainty of power is within ±3%. Certified in accordance with IEC61215, IEC61730-1/2 and UL 1703.

## Electrical Characteristics at Nominal Operating Cell Temperature (NOCT)

Module Type	CSUN435-144M	CSUN440-144M	CSUN445-144M	CSUN450-144M	CSUN455-144M
Maximum Power - P <sub>mpp</sub> (W)	322.2	326.0	329.7	333.4	337.1
Open Circuit Voltage - Voc(V)	45.10	45.30	45.50	45.60	45.80
Short Circuit Voltage - I <sub>sc</sub> (A)	9.19	9.24	9.30	9.35	9.40
Maximum Power Voltage - V <sub>mpp</sub> (V)	37.80	38.00	38.10	38.30	38.50
Maximum Power Current - I <sub>mpp</sub> (A)	8.53	8.59	8.64	8.70	8.75

Electrical data relates to nominal operating cell temperature (NOCT): irradiance 800 W/m<sup>2</sup>; wind speed 1 m/s ; cell temperature 45°C ambient temperature 20°C measuring uncertainty of power is within ±3%

## Temperature Characteristics

Voltage Temperature Coefficient	-0.286%/C
Current Temperature Coefficient	+0.057%/C
Power Temperature Coefficient	-0.370%/C

## Maximum Ratings

Maximum System Voltage (V)	1000 / 1500
Series Fuse Rating (A)	20
Reverse Current Overload (A)	30

## Mechanical Characteristics

Dimensions	2FF×10I × EI mm - frame thickness upon request
Weight	23.5kg
Frame	Anodized aluminum profile – black frame upon request
Front Glass	Toughened low iron glass,3.2 mm
Cell Encapsulation	EVA (Ethylene-Vinyl-Acetate)
Back Sheet	Composite film – black back sheet upon request
Cells	6x12x2 monocrytalline solar semi-cells (166x73)
Junction Box	Rated current ≥ 12A, IP ≥ 65, TUV & UL
Cable	1 × 4 mm <sup>2</sup>
Connector	MC 4/ compatible with MC 4

## Packaging

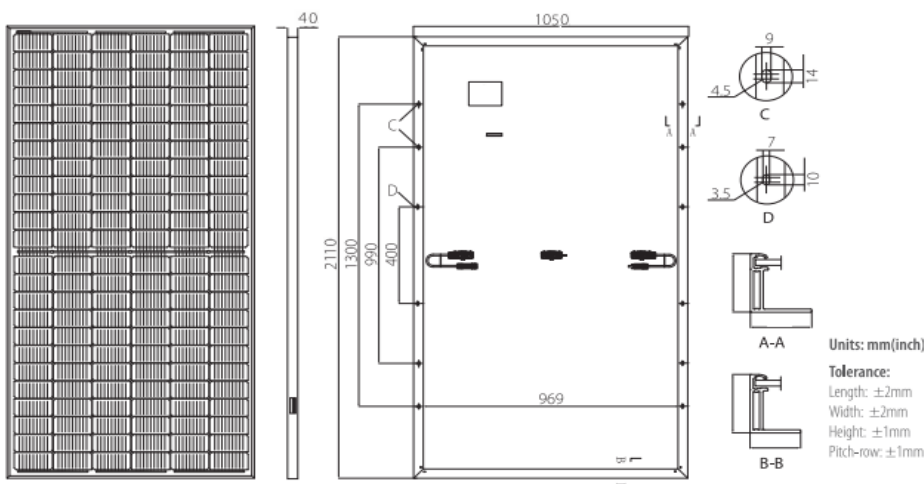
Container 20'	300 pcs.
Container 40'	1 JI pcs.
Container 40'HC	638 pcs.

## System Design

Temp. Range	-40°F to +185°F (-40°C to +85°C)
Hail	Max. diameter of 0.98" (25mm) with impact speed of 51.2mph (23m/s)
Max. Capacity	Wind 2400Pa, snow 5400Pa – 7200Pa upon request
Application Class	A
Safety Class	II

## Dimensions

Note: mm (inch)



## IV-Curves

