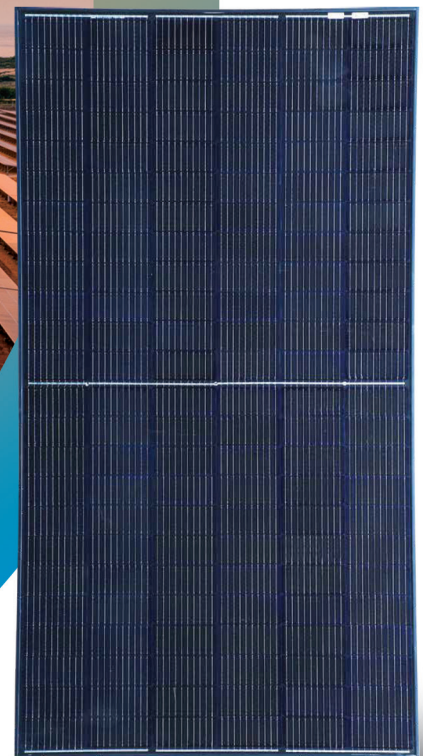




YOUR RELIABLE
PARTNER FOR
SOLAR ENERGY
SINCE 1992



EMMVEE CRAFTING SMART AND ADVANCED SOLAR ENERGY SOLUTIONS



GRAPHITE

Monoperc Black on Black Module



Committed to Quality, Punctuality, and Customer Support since 1992.



Over 15 Years of Sustainable Power with Photovoltaic Modules, New High WP Modules United with Quality and Efficiency



With presence in Green Energy Projects Across the Globe



Our Mission: Delivering Clean, Reliable Energy while Reducing Carbon Footprint through wide range of Residential and Commercial Solar Offerings.

144 HALF CUT CELL MONOPERC BLACK ON BLACK MODULE

TECHNICAL SPECIFICATION

Electrical data at 1000W/m², 25°C and A.M1.5 (STC in accordance with IEC 60904-3)

Model Name	E530HCM144-B	E535HCM144-B	E540HCM144-B
Rated Power at STC	530	535	540
Power Tolerance	+5W	+5W	+5W
Module Efficiency at STC	20.52%	20.71%	20.90%
Open Circuit Voltage-VOC(Volts)(±10%)	49.2	49.35	49.5
Short Circuit Current-ISC (AMPS)(±10%)	13.56	13.59	13.62
Max Power Voltage-VPM(Volts)	41.1	41.32	41.54
Max Power Current-IPM (AMPS)	12.9	12.95	13

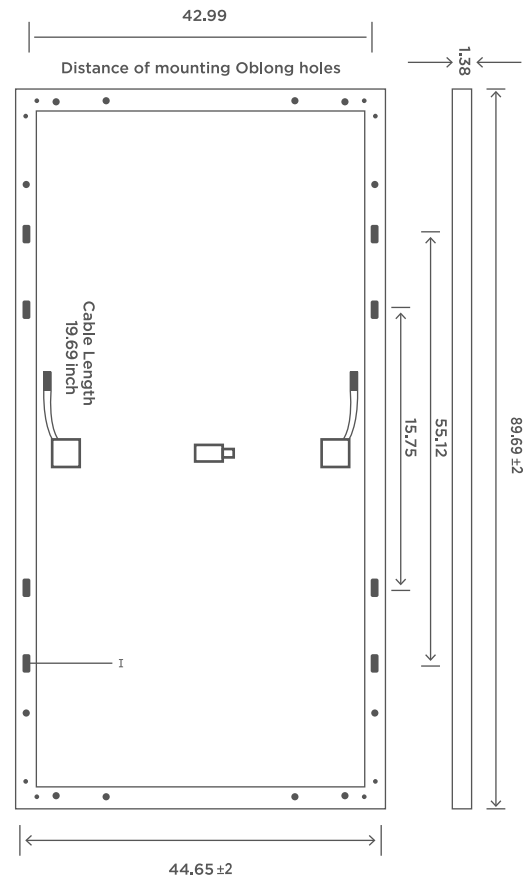
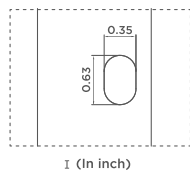
At low irradiance (200W/M₂, 25°C and AM1.5) the module yields at least 95% of the STC efficiency.

Test uncertainty for Pmax ±3%

Permissible Operating Conditions		Thermal Data	
Operating Temperature Range	-40° C TO 85° C	Temp. Coefficient Open-circuit Voltage	-0.28%/°C
Max.system Voltage	1500V DC	Temp. Coefficient Short Circuit Current	0.05%/°C
Maximum Snow Load Capacity	5400PA	Temp. Coefficient Rated Power	-0.35%/°C
Maximum wind load capacity	2400PA	NOCT (Normal operating cell temperature)	45° C ±2°C
Resistance Against Hail	Max Ø24mm with Impact Speed of 51 Mph		
Protection Class Against Electrical Shock	II		
Maximum Reverse Current	25 A		

Mechanical Data	
Number of Cells and Cell Type	144 Monoperc Monofacial Solar Cells (182mm X 91mm)
Dimensions: (L X W X H)	89.69 inch X 44.65 inch X 1.38 inch
Frame	Black
Weight	57.32 pounds
Front Glass	3.2 mm High Transmission, Solar Glass
Embedding	EVA
Back Sheet	Black Back Sheet
Junction Box	3 Split Junction Box IP68
Number of Bypass Diodes	3
Cables	4mm ² Solar Cables, Length 19.69 inch
Connectors	MC4 Compatible / Staubli Option Available
Application Class	A
Fire Class/Fire Type	C / Type 1

Warranty	
Product Warranty	12 years
Performance Warranty	25 years



1ST YEAR DEGRADATION <2.0%

YEAR 2-25 POWER DEGRADATION <0.55%

END OF 25 YEARS <84.8%

132 HALF CUT CELL MONOPERC BLACK ON BLACK MODULE

TECHNICAL SPECIFICATION

Electrical data at 1000W/m², 25°C and A.M1.5 (STC in accordance with IEC 60904-3)

Model Name	E485HCM132-B	E490HCM132-B	E495HCM132-B	E500HCM132-B
Rated Power at STC	485	490	495	500
Power Tolerance	+5W	+5W	+5W	+5W
Module Efficiency at STC	20.40%	20.61%	20.82%	21.03%
Open Circuit Voltage-VOC(Volts)(±10%)	44.43	44.65	44.79	44.92
Short Circuit Current-ISC (AMPS)(±10%)	13.00	13.09	13.15	13.24
Max Power Voltage-VPM(Volts)	38.81	38.94	39.14	39.27
Max Power Current-IPM (AMPS)	12.50	12.59	12.65	12.74

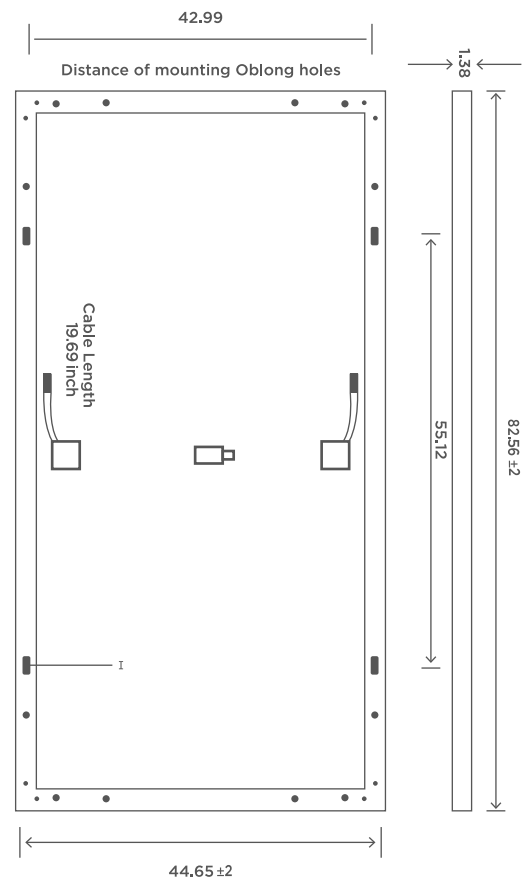
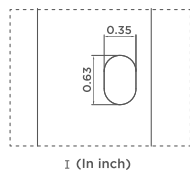
At low irradiance (200W/M₂, 25°C and AM1.5) the module yields at least 95% of the STC efficiency.

Test uncertainty for Pmax ±3%

Permissible Operating Conditions		Thermal Data	
Operating Temperature Range	-40° C TO 85° C	Temp. Coefficient Open-circuit Voltage	-0.28%/°C
Max.system Voltage	1500V DC	Temp. Coefficient Short Circuit Current	0.05%/°C
Maximum Snow Load Capacity	5400PA	Temp. Coefficient Rated Power	-0.35%/°C
Maximum wind load capacity	2400PA	NOCT (Normal operating cell temperature)	45° C ±2°C
Resistance Against Hail	Max Ø24mm with Impact Speed of 51 Mph		
Protection Class Against Electrical Shock	II		
Maximum Reverse Current	25 A		

Mechanical Data	
Number of Cells and Cell Type	132 Monoperc Monofacial Solar Cells (182mm X 91mm)
Dimensions: (L X W X H)	82.56 inch X 44.65 inch X 1.38 inch
Frame	Black
Weight	55.16 pounds
Front Glass	3.2 mm High Transmission, Solar Glass
Embedding	EVA
Back Sheet	Black Back Sheet
Junction Box	3 Split Junction Box IP68
Number of Bypass Diodes	3
Cables	4mm ² Solar Cables, Length 19.69 inch
Connectors	MC4 Compatible / Staubli Option Available
Application Class	A
Fire Class/Fire Type	C / Type 1

Warranty	
Product Warranty	12 years
Performance Warranty	25 years



1ST YEAR DEGRADATION <2.0%

YEAR 2-25 POWER DEGRADATION <0.55%

END OF 25 YEARS <84.8%

120 HALF CUT CELL MONOPERC BLACK ON BLACK MODULE

TECHNICAL SPECIFICATION

Electrical data at 1000W/m², 25°C and A.M1.5 (STC in accordance with IEC 60904-3)

Model Name	E440HCM120-B	E445HCM120-B	E450HCM120-B
Rated Power at STC	440	445	450
Power Tolerance	+5W	+5W	+5W
Model Efficiency at STC	20.28%	20.51%	20.74%
Open Circuit Voltage - VOC (Volts) (±10%)	41.44	41.46	41.56
Short Circuit Current - ISC (Amps) (±10%)	13.55	13.75	13.81
Max Power Voltage - VPM (Volts)	34.21	34.28	34.31
Max Power Current - IPM (Amps)	12.87	12.99	13.12

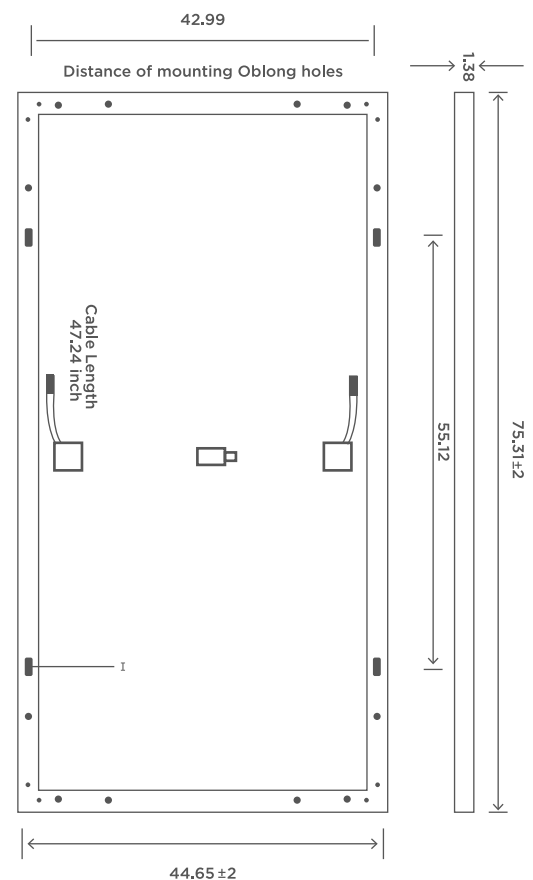
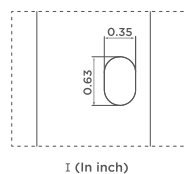
At low irradiance (200W/M₂, 25°C and AM1.5) the module yields at least 95% of the STC efficiency.

Test uncertainty for Pmax ±3%

Permissible Operating Conditions		Thermal Data	
Operating Temperature Range	-40° C TO 85° C	Temp. Coefficient Open-circuit Voltage	-0.28%/°C
Max.system Voltage	1500V DC	Temp. Coefficient Short Circuit Current	0.05%/°C
Maximum Snow Load Capacity	5400PA	Temp. Coefficient Rated Power	-0.35%/°C
Maximum wind load capacity	2400PA	NOCT (Normal operating cell temperature)	45° C ±2°C
Resistance Against Hail	Max Ø24mm with Impact Speed of 51 Mph		
Protection Class Against Electrical Shock	II		
Maximum Reverse Current	25 A		

Mechanical Data	
Number of Cells and Cell Type	120 Monoperc Monofacial Solar Cells (182mm X 91mm)
Dimensions: (L X W X H)	75.31 inch X 44.65 inch X 1.38 inch
Frame	Black
Weight	52.91 pounds
Front Glass	3.2 mm High Transmission, Solar Glass
Embedding	EVA
Back Sheet	Black Back Sheet
Junction Box	3 Split Junction Box IP68
Number of Bypass Diodes	3
Cables	4mm ² Solar Cables, Length 47.24 inch
Connectors	MC4 Compatible / Staubli Option Available
Application Class	A
Fire Class/Fire Type	C / Type 1

Warranty	
Product Warranty	12 years
Performance Warranty	25 years



1ST YEAR DEGRADATION <2.0%

YEAR 2-25 POWER DEGRADATION <0.55%

END OF 25 YEARS <84.8%

108 HALF CUT CELL MONOPERC BLACK ON BLACK MODULE

TECHNICAL SPECIFICATION

Electrical data at 1000W/m², 25°C and A.M1.5 (STC in accordance with IEC 60904-3)

Model Name	E385HCM108-B	E390HCM108-B	E395HCM108-B	E400HCM108-B
Rated Power at STC	385	390	395	400
Power Tolerance	+5W	+5W	+5W	+5W
Model Efficiency at STC	19.75%	20%	20.25%	20.51%
Open Circuit Voltage - VOC (Volts) (±10%)	36.13	36.33	36.54	36.61
Short Circuit Current - ISC (Amps) (±10%)	13.04	13.10	13.15	13.21
Max Power Voltage - VPM (Volts)	31.00	31.27	31.54	31.81
Max Power Current - IPM (Amps)	12.42	12.47	12.53	12.58

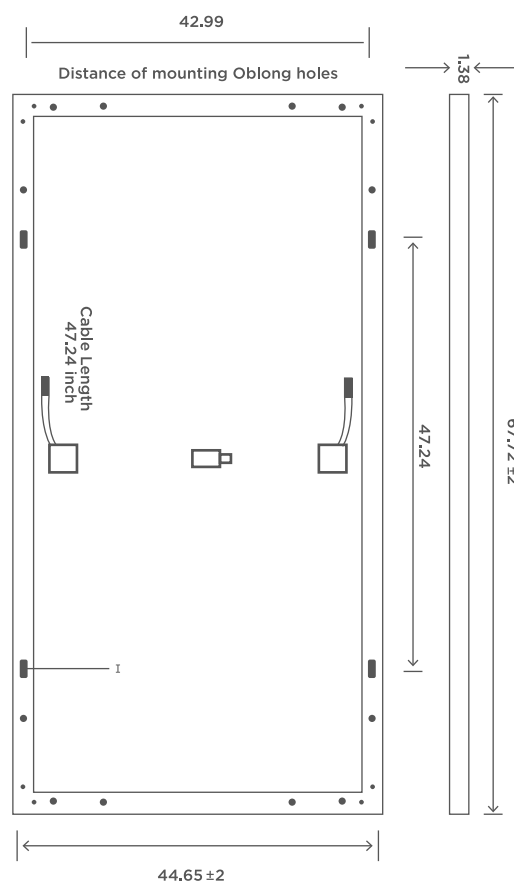
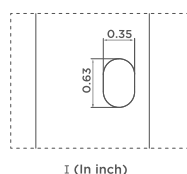
At low irradiance (200W/M₂, 25°C and AM1.5) the module yields at least 95% of the STC efficiency.

Test uncertainty for Pmax ±3%

Permissible Operating Conditions		Thermal Data	
Operating Temperature Range	-40° C TO 85° C	Temp. Coefficient Open-circuit Voltage	-0.28%/°C
Max.system Voltage	1500V DC	Temp. Coefficient Short Circuit Current	0.05%/°C
Maximum Snow Load Capacity	5400PA	Temp. Coefficient Rated Power	-0.35%/°C
Maximum wind load capacity	2400PA	NOCT (Normal operating cell temperature)	45° C ±2°C
Resistance Against Hail	Max Ø24mm with Impact Speed of 51 Mph		
Protection Class Against Electrical Shock	II		
Maximum Reverse Current	25 A		

Mechanical Data	
Number of Cells and Cell Type	108 Monoperc Monofacial Solar Cells (182mm X 91mm)
Dimensions: (L X W X H)	67.72 inch X 44.65 inch X 1.38 inch
Frame	Black
Weight	44.09 pounds
Front Glass	3.2 mm High Transmission, Solar Glass
Embedding	EVA
Back Sheet	Black Back Sheet
Junction Box	3 Split Junction Box IP68
Number of Bypass Diodes	3
Cables	4mm ² Solar Cables, Length 47.24 inch
Connectors	MC4 Compatible / Staubli Option Available
Application Class	A
Fire Class/Fire Type	C / Type 1

Warranty	
Product Warranty	12 years
Performance Warranty	25 years



1ST YEAR DEGRADATION <2.0%

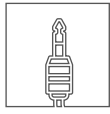
YEAR 2-25 POWER DEGRADATION <0.55%

END OF 25 YEARS <84.8%

FEATURES



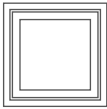
AR Coated High Transmission Glass



MC4 Compatible Connectors



PID Resistance



Anodised Aluminium Frame

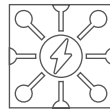


Snow Load Resistance upto 5400 Pa

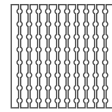
BENEFITS



Low LCOE, Faster Payback Period



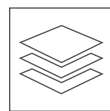
Best In Class Efficiency upto 21.5%



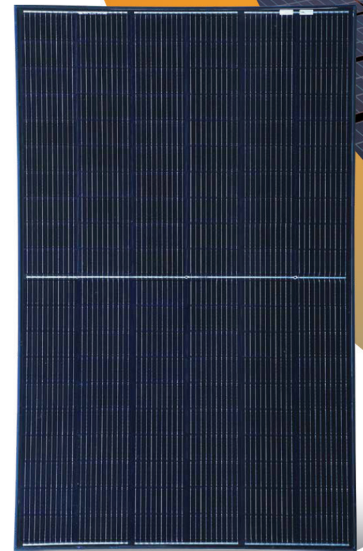
Multi-Bus Bar Technology for Better Current Collection



Lowest Guaranteed First Year and Annual Degradation



Well-Composed Components Stress to Reduce Micro Cracks



	<p>IEC 61215 IEC 61730 Regular Production Surveillance www.tuv.com ID: 1111257603</p>	<p>Salt Mist Resistance Regular Production Surveillance www.tuv.com ID: 1111219443</p>	<p>Ammonia Resistance Regular Production Surveillance www.tuv.com ID: 1111219415</p>		<p>ISO 9001:2015 ISO 14001:2015 OHSAS 45001</p>			
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*Product under testing at TUV for IEC standards.



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