

Exhibit C

Manufacturer Specifications

- 1. Trina**
- 2. Array Technologies, Inc.**
- 3. Power Electronics**

Exhibit C

Manufacturer Specifications

1. Trina



BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE

PRODUCT: TSM-DEG20C.20

PRODUCT RANGE: 580-600W

600W+

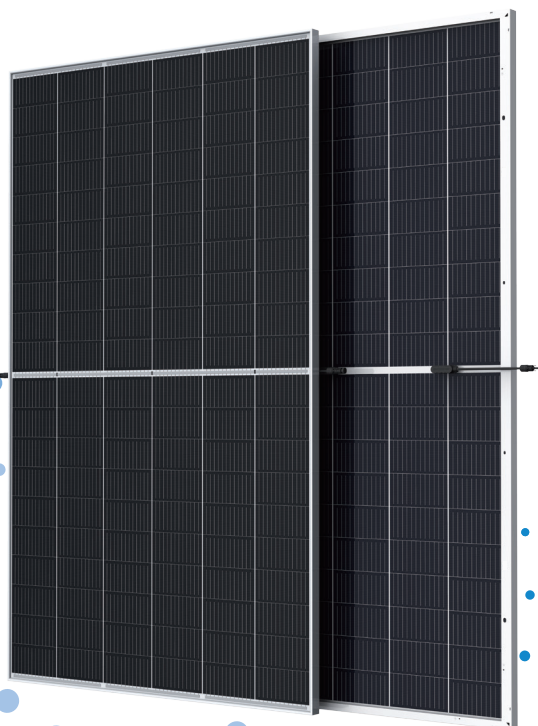
MAXIMUM POWER OUTPUT

0~+5W

POSITIVE POWER TOLERANCE

21.2%

MAXIMUM EFFICIENCY



High customer value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance of System) cost, shorter payback time
- Lowest guaranteed first year and annual degradation;
- Designed for compatibility with existing mainstream system components
- Higher return on Investment



High power up to 600W

- Up to 21.2% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection



High reliability

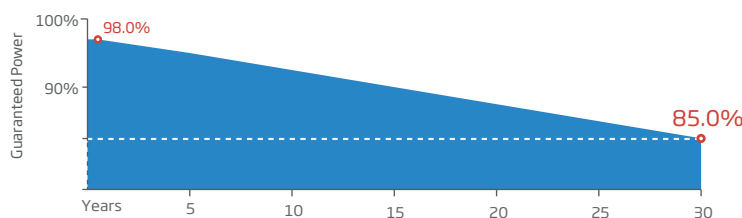
- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load



High energy yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions
- Lower temperature coefficient (-0.34%) and operating temperature
- Up to 25% additional power gain from back side depending on albedo

Trina Solar's Vertex Bifacial Dual Glass Performance Warranty



Comprehensive Products and System Certificates



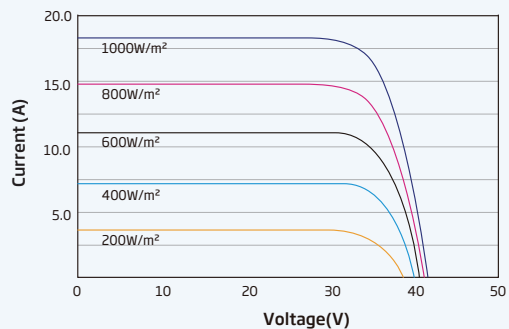
IEC61215/IEC61730/IEC61701/IEC62716/UL61730
 ISO 9001: Quality Management System
 ISO 14001: Environmental Management System
 ISO14064: Greenhouse Gases Emissions Verification
 ISO45001: Occupational Health and Safety Management System



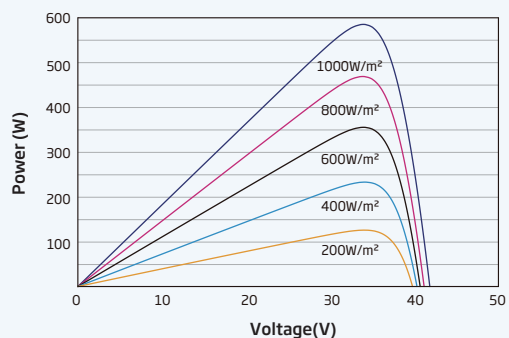
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(590 W)



P-V CURVES OF PV MODULE(590 W)



ELECTRICAL DATA (STC)

Peak Power Watts-P _{MAX} (Wp)*	580	585	590	595	600
Power Tolerance-P _{MAX} (W)	0 ~ +5				
Maximum Power Voltage-V _{MPP} (V)	33.8	34.0	34.2	34.4	34.6
Maximum Power Current-I _{MPP} (A)	17.16	17.21	17.25	17.30	17.34
Open Circuit Voltage-V _{OC} (V)	40.9	41.1	41.3	41.5	41.7
Short Circuit Current-I _{SC} (A)	18.21	18.26	18.31	18.36	18.42
Module Efficiency η_m (%)	20.5	20.7	20.8	21.0	21.2

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5. *Measuring tolerance: $\pm 3\%$.

Electrical characteristics with different power bin (reference to 10% Irradiance ratio)

Total Equivalent power -P _{MAX} (Wp)	621	626	631	637	642
Maximum Power Voltage-V _{MPP} (V)	33.8	34.0	34.2	34.4	34.6
Maximum Power Current-I _{MPP} (A)	18.36	18.41	18.46	18.51	18.55
Open Circuit Voltage-V _{OC} (V)	40.9	41.1	41.3	41.5	41.7
Short Circuit Current-I _{SC} (A)	19.48	19.54	19.59	19.65	19.71
Irradiance ratio (rear/front)	10%				

Power Bifaciality: 70 \pm 5%.

ELECTRICAL DATA (NOCT)

Maximum Power-P _{MAX} (Wp)	439	443	447	451	454
Maximum Power Voltage-V _{MPP} (V)	31.5	31.7	31.9	32.0	32.2
Maximum Power Current-I _{MPP} (A)	13.93	13.97	14.01	14.06	14.10
Open Circuit Voltage-V _{OC} (V)	38.5	38.7	38.9	39.1	39.3
Short Circuit Current-I _{SC} (A)	14.68	14.72	14.76	14.80	14.84

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	120 cells
Module Dimensions	2172×1303×40 mm (85.51×51.30×1.57 inches)
Weight	35.3 kg (77.8 lb)
Front Glass	2.0 mm (0.08 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	POE/EVA
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	40mm(1.57 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² (0.006 inches ²), Portrait: 280/280 mm(11.02/11.02 inches) Landscape: 1400/1400 mm(55.12/55.12 inches)
Connector	MC4 EV02 / TS4*

*Please refer to regional datasheet for specified connector.

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C ($\pm 2^\circ\text{C}$)
Temperature Coefficient of P _{MAX}	-0.34%/°C
Temperature Coefficient of V _{OC}	-0.25%/°C
Temperature Coefficient of I _{SC}	0.04%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC) 1500V DC (UL)
Max Series Fuse Rating	35A

WARRANTY

12 year Product Workmanship Warranty
30 year Power Warranty
2% first year degradation
0.45% Annual Power Attenuation

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per 40' container: 448 pieces

Exhibit C

Manufacturer Specifications

2. Array Technologies

**99.996%
UPTIME.
ENGINEERED
SIMPLICITY.**

**7%
LOWER
LCOE**

**31%
LOWER
LIFETIME
O&M**

DuraTrack® HZ v3

Three decades of field-tested design improvements have resulted in the DuraTrack® HZ v3 — the most durable, reliable tracking system under the sun. While our single-bolt module clamp and forgiving tolerances streamline installation, and our flexibly linked architecture maximizes power density, it's our innovative use of fewer components and a failure-free wind management system that makes Array Technologies the best choice for solar trackers. **Better. Stronger. Smarter.**



HIGHEST POWER DENSITY.

Higher density means more power and more profit. DuraTrack HZ v3 offers the unique ability to maximize the power density of each site, boasting 100 modules per row and higher density than our closest competition.



LEADING TERRAIN ADAPTABILITY.

Our flexibly linked architecture, with articulating driveline joints and forgiving tolerances, creates the most adaptable system on the market for following natural land contours while creating the greatest power generation potential from every site.



FEWER COMPONENTS. GREATER RELIABILITY.

Array was founded on a philosophy of engineered simplicity. Minimizing potential failure points (167 times fewer components than competitors), DuraTrack HZ v3 consistently delivers higher reliability and superior uptime.



FAILURE-FREE WIND DESIGN.

DuraTrack HZ v3 was designed and field tested to withstand some of the harshest conditions on the planet. It is the only tracker on the market that reliably handles wind events with a fully integrated, fully mechanical, passive wind-load mitigation system without the need for complex communication systems, batteries, or power.



ZERO SCHEDULED MAINTENANCE.

Maintenance-free motors and gears, fewer moving parts, and industrial-grade components—what does this mean for our customers? No scheduled maintenance required. While our competitors average two unscheduled maintenance events per day, we average only one per year.

COST VERSUS VALUE

We believe value is more than the cost of a tracking system. It's about building with forgiving tolerances and fewer parts so construction crews can work efficiently. It means protecting your investment with a failure-free wind management system. It also includes increasing power density. But most of all, value is measured in operational uptime, or reliability.

THE GLOBAL LEADER IN RELIABILITY

Array has spent decades designing and perfecting the most reliable tracker on the planet. Fewer moving parts, stronger components and intelligent design that protects your investment in the harshest weather are but a few of the innovative differences that keep your system running flawlessly all day and you resting easy at night.

ARRAY TECHNOLOGIES, INC.

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arraytechinc.com

30 GW YEARS OF
OPERATION

167x FEWER COMPONENTS THAN
COMPETITIVE TRACKERS

STRUCTURAL & MECHANICAL FEATURES/SPECIFICATIONS

Tracking Type	Horizontal single axis
Less than 1 drive motor /MW	Up to 1.152 MW DC
String Voltage	Up to 1,500V DC
Maximum Linked Rows	32
Maximum Row Size	100 modules crystalline, and bifacial; 240 modules First Solar 4; 78 modules First Solar 6
Drive Type	Rotating gear drive
Motor Type	2 HP, 3 PH, 480V AC
East-West/North-South Dimensions	Site / module specific
Array Height	54" standard, adjustable (48" min height above grade)
Ground Coverage Ratio (GCR)	Flexible, 28–45% typical, others supported on request
Terrain Flexibility	N-S tolerance: 0-15% standard, 26% optional; Driveline: 40° in all directions
Modules Supported	Most commercially available, including frameless crystalline, thin film, and bifacial
Tracking Range of Motion	± 52° standard, ± 62° optional
Operating Temperature Range	-30°F to 140°F (-34°C to 60°C)
Module Configuration available.	Single-in-portrait standard, including bifacial. Four-in-landscape (thin film)
Module Attachment	Single fastener, high-speed mounting clamps with integrated grounding. Traditional rails for crystalline in landscape, custom racking for thin film and frameless crystalline and bifacial per manufacturer specs.
Materials	Pre-galv steel, HDG steel and aluminum structural members, as required
Allowable Wind Load (ASCE 7-10)	140 mph, 3-second gust exposure C
Wind Protection	Failure free passive mechanical system protects against wind damage without the use of complex communications systems, batteries — no power required

ELECTRONIC CONTROLLER FEATURES/SPECIFICATIONS

Solar Tracking Method	Algorithm with GPS input
Control Electronics	MCU plus Central Controller
Data Feed	MODBUS over Ethernet to SCADA system
Night-time Stow	Yes
Tracking Accuracy	± 2° standard, field adjustable
Backtracking	Yes

INSTALLATION, OPERATION & MAINTENANCE

Software	SmarTrack optimization available
PE Stamped Structural Calculations & Drawings	Yes
On-site Training and System Commissioning	Yes
Connection Type	Fully bolted connections, no welding
In-field Fabrication Required	No
Dry Slide Bearings and Articulating Driveline Connections	No lubrication required
Scheduled Maintenance	None required
Module Cleaning Compatibility	Robotic, Tractor, Manual

GENERAL

Annual Power Consumption (kWh per 1 MW)	400 kWh per MW per year, estimate
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3. Power Electronics



HEM

UTILITY SCALE MV CENTRAL STRING INVERTER



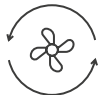
FIELD REPLACEABLE UNITS



OUTDOOR DURABILITY



NEMA 3R / IP54



iCOOL 3



ACTIVE HEATING



3 LEVEL TOPOLOGY



ECON MODE



NEW RATINGS

THE INNOVATIVE MEDIUM VOLTAGE CENTRAL STRING INVERTER

The Power Electronics HEM medium voltage inverter is designed for utility scale solar applications, that require the advantages of a central inverter solution but also the modularity of a string architecture. The HEM can reach up to a nominal power of 3.6MVA, and offers a wide MPPT window. It also has the added advantage of having an integrated medium voltage transformer and switchgear.

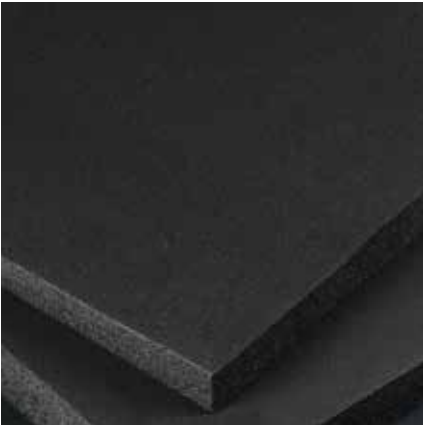
Its architecture, composed of six field replaceable units (FRU), is designed to provide the highest availability and optimize yield production. Its use in Utility Scale PV plants provides considerable savings in CAPEX, since having an integrated MV transformer and switchgear reduces the need of additional connections between the LV and MV sides.

Thanks to the Power Electronics iCOOL3 cooling system, the HEM is able to provide IP54 degree of protection with an air cooling system, and as a result reducing OPEX costs.

ROBUST DESIGN



Polymeric Painting



Closed-Cell Insulation



Galvanized Steel | Stainless Steel (Optional)

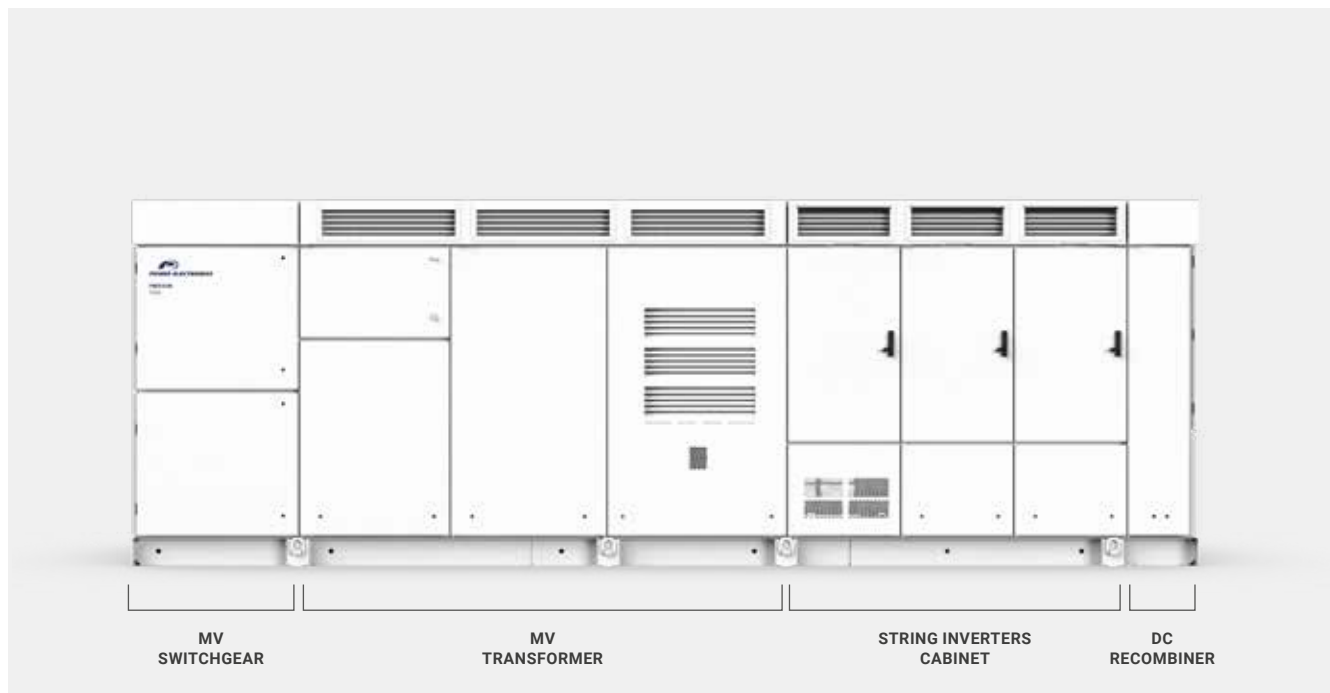
HEM inverter modules have a design life of greater than 30 years of operation in harsh environments and extreme weather conditions. HEM units are tested and ready to withstand conditions from the frozen Siberian tundra to the Californian Death Valley, featuring:

- Totally sealed electronics cabinet protects electronics against dust and moisture.
- Conformal coating on electronic boards shields PCBs from harsh atmospheres.
- Temperature and humidity controlled active heating prevents internal water condensation.
- C4 degree of protection according to ISO 12944. Up to C5-M optional.
- Closed-Cell insulation panel isolates the cabinet from solar heat gains.
- Roof cover designed to dissipate solar radiation, reduce heat build-up and avoid water leakages.
- The solid HEM structure avoids the need of additional external structures.
- Random units selected to pass a Factory Water Tightness Test ensuring product quality.
- NEMA 3R / IP54.

REAL TURN-KEY SOLUTION - EASY TO SERVICE

With the HEM, Power Electronics offers a real turn-key solution, including the MV transformer and switchgear fully assembled and tested at the factory. The HEM is a compact turn-key solution that will reduce site design, installation and connection costs.

By providing full front access the HEM series simplifies the maintenance tasks, reducing the MTTR (and achieving a lower OPEX). The total access allows a fast swap of the FRUs without the need of qualified technical personnel.



STRING CONCEPT POWER STAGES

The HEM combines the advantages of a central inverter with the modularity of the string inverters. Its power stages are designed to be easily replaceable on the field without the need of advanced technical service personnel, providing a safe, reliable and fast Plug&Play assembly system.

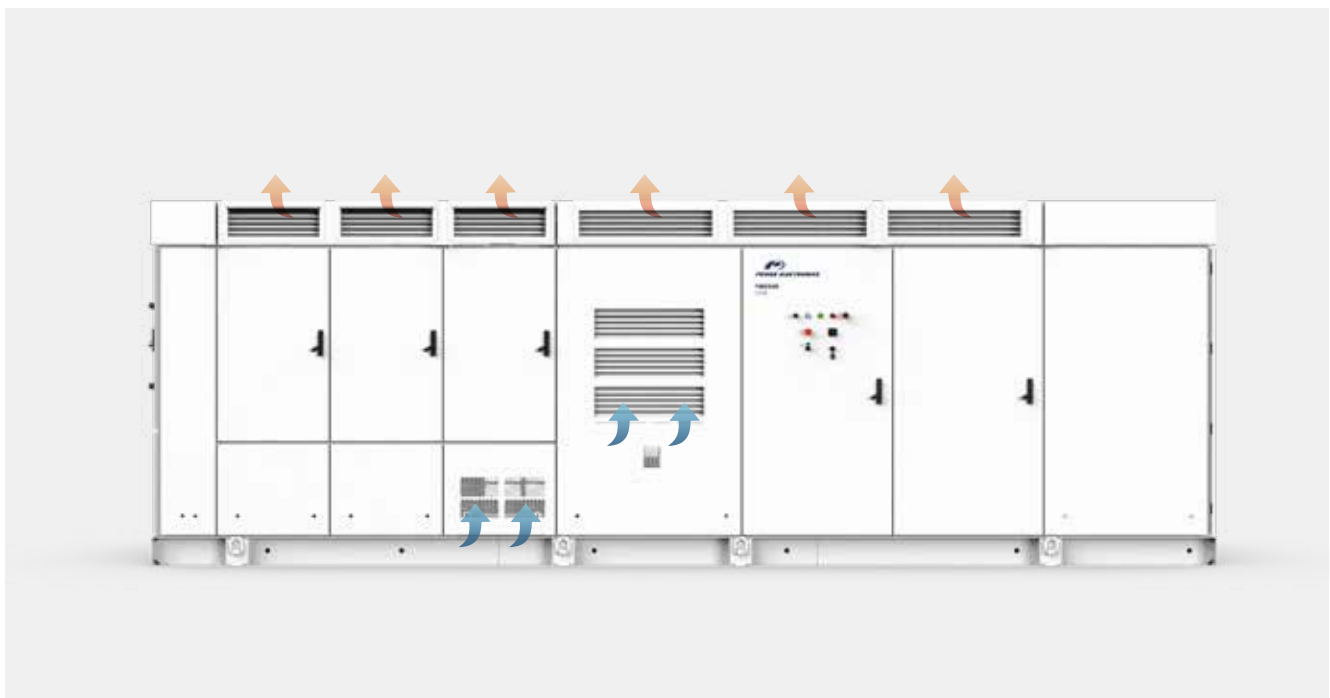
Following the modular philosophy of the Freesun series, the HEM is composed of 6 FRUs (field replaceable units), where all the power stages are physically joined in the DC side and therefore, in the event of a fault, the faulty module is taken off-line and its power is distributed evenly among the remaining functioning FRUs.



INNOVATIVE COOLING SYSTEM

Based on more than 3 years of experience with our MV Variable Speed Drive, the iCOOL3 is the first air-cooling system allowing IP54 degree of protection in an outdoor solar inverter. iCOOL3 delivers a constant stream of clean air to the FRUs and the MV transformer, being the most effective way

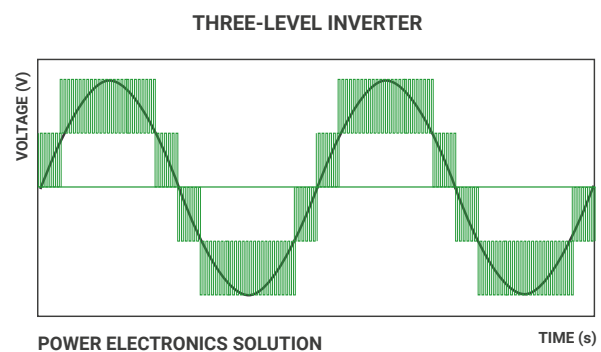
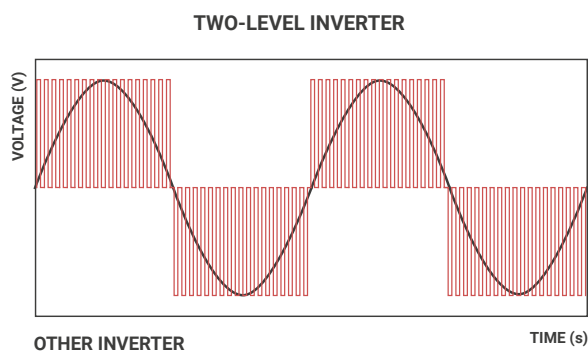
of reaching up to IP54 degree of protection, without having to maintain cumbersome dust filters or having to use liquid-cooling systems, avoiding the commonly known inconveniences of it (complex maintenance, risk of leaks, higher number of components...), therefore resulting in an OPEX cost reduction.



MULTILEVEL TOPOLOGY

The multilevel IGBT topology is the most efficient approach to manage high DC link voltages and makes the difference in the 1,500 Vdc design. Power Electronics has many years of power design in both inverters and MV drives and the HEM

design is the result of our experience with 3 level topologies. The 3 level IGBT topology reduces stage losses, increases inverter efficiency and minimizes total harmonic distortion.



VAR AT NIGHT

At night, the HEM inverter can shift to reactive power compensation mode. The inverter can respond to an external dynamic signal, a Power Plant Controller command or pre-set reactive power level (kVar).

ACTIVE HEATING

At night, when the unit is not actively exporting power, the inverter can import a small amount of power to keep the inverter internal ambient temperature above -20°C, without using external resistors.

This autonomous heating system is the most efficient and homogeneous way to prevent condensation, increasing the inverters availability and reducing maintenance. **PATENTED**

ECON MODE

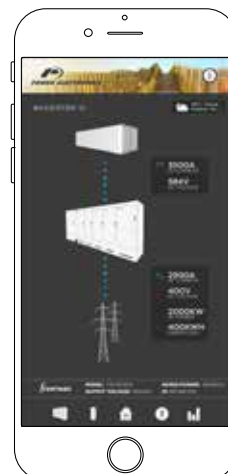
This innovative control mode allows increasing the efficiency of the MV transformer up to 25%, reducing the power consumption of the plant and therefore providing considerable

savings. Available as an optional kit, this feature has a pay-back time of less than a few years, therefore resulting in the increase of the plant lifetime overall revenue.

EASY TO MONITOR

The Freesun app is the easiest way to monitor the status of our inverters. All our inverters come with built-in wifi, allowing remote connectivity to any smart device for detailed updates and information without the need to open cabinet doors.

The app user-friendly interface allows quick and easy access to critical information (energy registers, production and events).



AVAILABLE INFORMATION

Grid and PV field data.
Inverter and Power module data (Voltages, currents, power, temperatures, I/O status...).
Weather conditions.
Alarms and warnings events.
Energy registers.
Others.

FEATURES

Easy Wireless connection.
Comprehensive interface.
Real time data.
Save and copy settings.

LANGUAGE

English, Spanish.

SYSTEM REQUIREMENTS

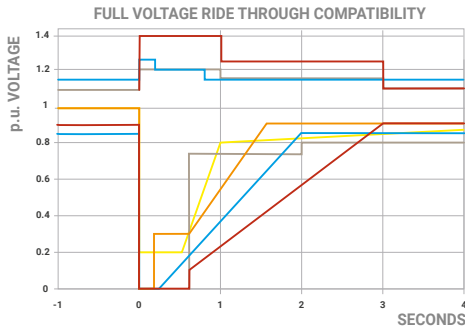
iOS or Android devices.

SETTINGS CONTROL

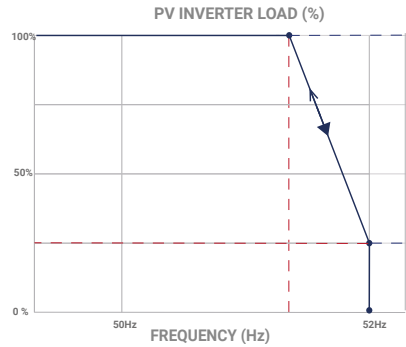
Yes.

DYNAMIC GRID SUPPORT

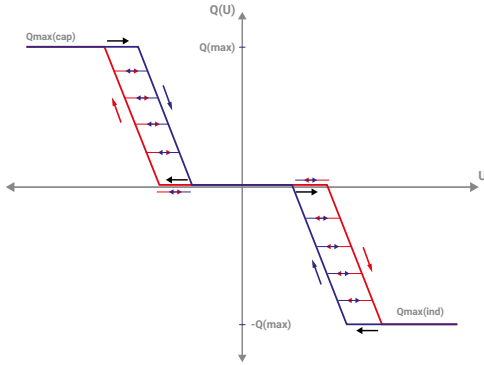
HEM firmware includes the latest utility interactive features (LVRT, OVRT, FRS, FRT, Anti-islanding, active and reactive power curtailment...), and can be configured to meet specific utility requirements.



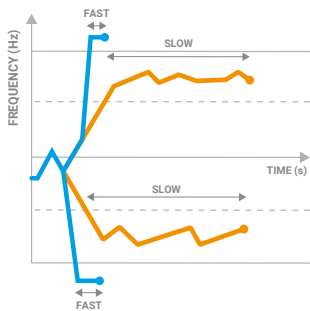
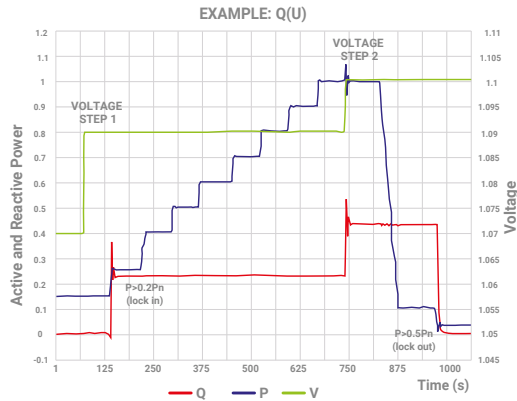
Low Voltage Ride Through (LVRT or ZVRT). Inverters can withstand any voltage dip or profile required by the local utility. The inverter can immediately feed the fault with full reactive current, as long as the protection limits are not exceeded.



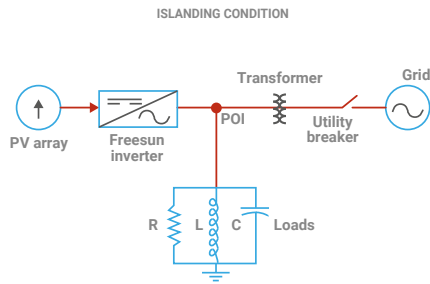
Frequency Regulation System (FRS). Frequency droop algorithm curtails the active power along a preset characteristic curve supporting grid stabilization.



Q(V) curve. It is a dynamic voltage control function which provides reactive power in order to maintain the voltage as close as possible to its nominal value.



Frequency Ride Through (FRT). Freesun solar inverters have flexible frequency protection settings and can be easily adjusted to comply with future requirements.



Anti-islanding. This protection combines passive and active methods that eliminates nuisance tripping and reduces grid distortion according to IEC 62116 and IEEE1547.

FRONT VIEW



BACK VIEW



TECHNICAL CHARACTERISTICS

HEM

REFERENCE	FS3510M	
OUTPUT	AC Output Power (kVA/kW) @50°C ^[1]	3510
	AC Output Power (kVA/kW) @40°C ^[1]	3630
	Operating Grid Voltage (VAC) ^[2]	34.5kV ±10%
	Operating Grid Frequency (Hz)	50Hz/60Hz
	Current Harmonic Distortion (THDi)	< 3% per IEEE519
	Power Factor (cosine phi) ^[3]	0.5 leading ... 0.5 lagging adjustable / Reactive Power injection at night
INPUT	MPPT @full power (VDC)	934V-1310V
	Maximum DC voltage	1500V
	Number of PV inputs ^[2]	Up to 36
	Number of Freemaq DC/DC inputs ^[4]	Up to 6
	Max. DC continuous current (A) ^[4]	3970
	Max. DC short circuit current (A) ^[4]	6000
EFFICIENCY & AUXILIARY SUPPLY	Efficiency (Max) (η)	98% including MV transformer (preliminary)
	CEC (η)	98% including MV transformer (preliminary)
	Max. Power Consumption (KVA)	20
CABINET	Dimensions [WxDxH] (ft)	21.7 x 7 x 7
	Dimensions [WxDxH] (m)	6.6 x 2.2 x 2.2
	Weight (lb)	30865
	Weight (kg)	14000
	Type of ventilation	Forced air cooling
ENVIRONMENT	Degree of protection	NEMA 3R - IP54
	Permissible Ambient Temperature	-35°C to +60°C / >50°C Active Power derating
	Relative Humidity	4% to 100% non condensing
	Max. Altitude (above sea level) ^[5]	2000m
	Noise level ^[6]	< 79 dBA
CONTROL INTERFACE	Interface	Graphic Display
	Communication protocol	Modbus TCP
	Plant Controller Communication	Optional
	Keyed ON/OFF switch	Standard
PROTECTIONS	Ground Fault Protection	GFDI and Isolation monitoring device
	General AC Protection	MV Switchgear (configurable)
	General DC Protection	Fuses
	Overvoltage Protection	AC, DC Inverter and auxiliary supply type 2
CERTIFICATIONS	Safety	UL 1741, CSA 22.2 No.107.1-01, UL 62109-1, IEC 62109-1, IEC 62109-2
	Compliance	NEC 2014 / NEC 2017 (optional)
	Utility interconnect	IEEE 1547.1-2005 / UL 1741 SA-Sept. 2016

[1] Values at 1.00•Vac nom and cos Φ= 1. Consult Power Electronics for derating curves.

[2] Consult Power Electronics for other configurations.

[3] Consult P-Q charts available: $Q(kVAR) = \sqrt{(S(kVA))^2 - P(kW)^2}$.

[4] Consult Power Electronics for Freemaq DC/DC connection configurations.

[5] Consult Power Electronics for other altitudes.

[6] Readings taken 1 meter from the back of the unit.

TECHNICAL CHARACTERISTICS

HEM

REFERENCE	FS3430M	
OUTPUT	AC Output Power (kVA/kW) @50°C ^[1]	3430
	AC Output Power (kVA/kW) @40°C ^[1]	3550
	Operating Grid Voltage (VAC) ^[2]	34.5kV ±10%
	Operating Grid Frequency (Hz)	50Hz/60Hz
	Current Harmonic Distortion (THDi)	< 3% per IEEE519
	Power Factor (cosine phi) ^[3]	0.5 leading ... 0.5 lagging adjustable / Reactive Power injection at night
INPUT	MPPt @full power (VDC)	913V-1310V
	Maximum DC voltage	1500V
	Number of PV inputs ^[2]	Up to 36
	Number of Freemaq DC/DC inputs ^[4]	Up to 6
	Max. DC continuous current (A) ^[4]	3970
	Max. DC short circuit current (A) ^[4]	6000
EFFICIENCY & AUXILIARY SUPPLY	Efficiency (Max) (η)	98% including MV transformer (preliminary)
	CEC (η)	98% including MV transformer (preliminary)
	Max. Power Consumption (KVA)	20
CABINET	Dimensions [WxDxH] (ft)	21.7 x 7 x 7
	Dimensions [WxDxH] (m)	6.6 x 2.2 x 2.2
	Weight (lb)	30865
	Weight (kg)	14000
	Type of ventilation	Forced air cooling
ENVIRONMENT	Degree of protection	NEMA 3R - IP54
	Permissible Ambient Temperature	-35°C to +60°C / >50°C Active Power derating
	Relative Humidity	4% to 100% non condensing
	Max. Altitude (above sea level) ^[5]	2000m
	Noise level ^[6]	< 79 dBA
CONTROL INTERFACE	Interface	Graphic Display
	Communication protocol	Modbus TCP
	Plant Controller Communication	Optional
	Keyed ON/OFF switch	Standard
PROTECTIONS	Ground Fault Protection	GFDI and Isolation monitoring device
	General AC Protection	MV Switchgear (configurable)
	General DC Protection	Fuses
	Overvoltage Protection	AC, DC Inverter and auxiliary supply type 2
CERTIFICATIONS	Safety	UL 1741, CSA 22.2 No.107.1-01, UL 62109-1, IEC 62109-1, IEC 62109-2
	Compliance	NEC 2014 / NEC 2017 (optional)
	Utility interconnect	IEEE 1547.1-2005 / UL 1741 SA-Sept. 2016

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[3] Consult P-Q charts available: $Q(kVar)=\sqrt{(S(kVA))^2-P(kW)^2}$.

[4] Consult Power Electronics for Freemaq DC/DC connection configurations.

[5] Consult Power Electronics for other altitudes.

[6] Readings taken 1 meter from the back of the unit.

TECHNICAL CHARACTERISTICS

HEM

REFERENCE	FS3350M	
OUTPUT	AC Output Power (kVA/kW) @50°C ^[1]	3350
	AC Output Power (kVA/kW) @40°C ^[1]	3465
	Operating Grid Voltage (VAC) ^[2]	34.5kV ±10%
	Operating Grid Frequency (Hz)	50Hz/60Hz
	Current Harmonic Distortion (THDi)	< 3% per IEEE519
	Power Factor (cosine phi) ^[3]	0.5 leading ... 0.5 lagging adjustable / Reactive Power injection at night
INPUT	MPPt @full power (VDC)	891V-1310V
	Maximum DC voltage	1500V
	Number of PV inputs ^[2]	Up to 36
	Number of Freemaq DC/DC inputs ^[4]	Up to 6
	Max. DC continuous current (A) ^[4]	3970
	Max. DC short circuit current (A) ^[4]	6000
EFFICIENCY & AUXILIARY SUPPLY	Efficiency (Max) (η)	98% including MV transformer (preliminary)
	CEC (η)	97.5% including MV transformer (preliminary)
	Max. Power Consumption (KVA)	20
CABINET	Dimensions [WxDxH] (ft)	21.7 x 7 x 7
	Dimensions [WxDxH] (m)	6.6 x 2.2 x 2.2
	Weight (lb)	30865
	Weight (kg)	14000
	Type of ventilation	Forced air cooling
ENVIRONMENT	Degree of protection	NEMA 3R - IP54
	Permissible Ambient Temperature	-35°C to +60°C / >50°C Active Power derating
	Relative Humidity	4% to 100% non condensing
	Max. Altitude (above sea level) ^[5]	2000m
	Noise level ^[6]	< 79 dBA
CONTROL INTERFACE	Interface	Graphic Display
	Communication protocol	Modbus TCP
	Plant Controller Communication	Optional
	Keyed ON/OFF switch	Standard
PROTECTIONS	Ground Fault Protection	GFDI and Isolation monitoring device
	General AC Protection	MV Switchgear (configurable)
	General DC Protection	Fuses
	Overvoltage Protection	AC, DC Inverter and auxiliary supply type 2
CERTIFICATIONS	Safety	UL 1741, CSA 22.2 No.107.1-01, UL 62109-1, IEC 62109-1, IEC 62109-2
	Compliance	NEC 2014 / NEC 2017 (optional)
	Utility interconnect	IEEE 1547.1-2005 / UL 1741 SA-Sept. 2016

[1] Values at 1.00•Vac nom and cos Φ= 1. Consult Power Electronics for derating curves.

[2] Consult Power Electronics for other configurations.

[3] Consult P-Q charts available: $Q(kVAR) = \sqrt{(S(kVA))^2 - P(kW)^2}$.

[4] Consult Power Electronics for Freemaq DC/DC connection configurations.

[5] Consult Power Electronics for other altitudes.

[6] Readings taken 1 meter from the back of the unit.

TECHNICAL CHARACTERISTICS

HEM

REFERENCE	FS3270M	
OUTPUT	AC Output Power (kVA/kW) @50°C ^[1]	3270
	AC Output Power (kVA/kW) @40°C ^[1]	3380
	Operating Grid Voltage (VAC) ^[2]	34.5kV ±10%
	Operating Grid Frequency (Hz)	50Hz/60Hz
	Current Harmonic Distortion (THDi)	< 3% per IEEE519
	Power Factor (cosine phi) ^[3]	0.5 leading ... 0.5 lagging adjustable / Reactive Power injection at night
INPUT	MPPt @full power (VDC)	870V-1310V
	Maximum DC voltage	1500V
	Number of PV inputs ^[2]	Up to 36
	Number of Freemaq DC/DC inputs ^[4]	Up to 6
	Max. DC continuous current (A) ^[4]	3970
	Max. DC short circuit current (A) ^[4]	6000
EFFICIENCY & AUXILIARY SUPPLY	Efficiency (Max) (η)	98% including MV transformer (preliminary)
	CEC (η)	98% including MV transformer (preliminary)
	Max. Power Consumption (KVA)	20
CABINET	Dimensions [WxDxH] (ft)	21.7 x 7 x 7
	Dimensions [WxDxH] (m)	6.6 x 2.2 x 2.2
	Weight (lb)	30865
	Weight (kg)	14000
	Type of ventilation	Forced air cooling
ENVIRONMENT	Degree of protection	NEMA 3R - IP54
	Permissible Ambient Temperature	-35°C to +60°C / >50°C Active Power derating
	Relative Humidity	4% to 100% non condensing
	Max. Altitude (above sea level) ^[5]	2000m
	Noise level ^[6]	< 79 dBA
CONTROL INTERFACE	Interface	Graphic Display
	Communication protocol	Modbus TCP
	Plant Controller Communication	Optional
	Keyed ON/OFF switch	Standard
PROTECTIONS	Ground Fault Protection	GFDI and Isolation monitoring device
	General AC Protection	MV Switchgear (configurable)
	General DC Protection	Fuses
	Overvoltage Protection	AC, DC Inverter and auxiliary supply type 2
CERTIFICATIONS	Safety	UL 1741, CSA 22.2 No.107.1-01, UL 62109-1, IEC 62109-1, IEC 62109-2
	Compliance	NEC 2014 / NEC 2017 (optional)
	Utility interconnect	IEEE 1547.1-2005 / UL 1741 SA-Sept. 2016

[1] Values at 1.00•Vac nom and cos Φ= 1. Consult Power Electronics for derating curves.

[2] Consult Power Electronics for other configurations.

[3] Consult P-Q charts available: $Q(kVar)=\sqrt{(S(kVA))^2-P(kW)^2}$.

[4] Consult Power Electronics for Freemaq DC/DC connection configurations.

[5] Consult Power Electronics for other altitudes.

[6] Readings taken 1 meter from the back of the unit.

TECHNICAL CHARACTERISTICS

HEM

REFERENCE	FS3190M	
OUTPUT	AC Output Power (kVA/kW) @50°C ^[1]	3190
	AC Output Power (kVA/kW) @40°C ^[1]	3300
	Operating Grid Voltage (VAC) ^[2]	34.5kV ±10%
	Operating Grid Frequency (Hz)	50Hz/60Hz
	Current Harmonic Distortion (THDi)	< 3% per IEEE519
	Power Factor (cosine phi) ^[3]	0.5 leading ... 0.5 lagging adjustable / Reactive Power injection at night
INPUT	MPPt @full power (VDC)	849V-1310V
	Maximum DC voltage	1500V
	Number of PV inputs ^[2]	Up to 36
	Number of Freemaq DC/DC inputs ^[4]	Up to 6
	Max. DC continuous current (A) ^[4]	3970
	Max. DC short circuit current (A) ^[4]	6000
EFFICIENCY & AUXILIARY SUPPLY	Efficiency (Max) (η)	98% including MV transformer (preliminary)
	CEC (η)	98% including MV transformer (preliminary)
	Max. Power Consumption (KVA)	20
CABINET	Dimensions [WxDxH] (ft)	21.7 x 7 x 7
	Dimensions [WxDxH] (m)	6.6 x 2.2 x 2.2
	Weight (lb)	30865
	Weight (kg)	14000
	Type of ventilation	Forced air cooling
ENVIRONMENT	Degree of protection	NEMA 3R - IP54
	Permissible Ambient Temperature	-35°C to +60°C / >50°C Active Power derating
	Relative Humidity	4% to 100% non condensing
	Max. Altitude (above sea level) ^[5]	2000m
	Noise level ^[6]	< 79 dBA
CONTROL INTERFACE	Interface	Graphic Display
	Communication protocol	Modbus TCP
	Plant Controller Communication	Optional
	Keyed ON/OFF switch	Standard
PROTECTIONS	Ground Fault Protection	GFDI and Isolation monitoring device
	General AC Protection	MV Switchgear (configurable)
	General DC Protection	Fuses
	Overvoltage Protection	AC, DC Inverter and auxiliary supply type 2
CERTIFICATIONS	Safety	UL 1741, CSA 22.2 No.107.1-01, UL 62109-1, IEC 62109-1, IEC 62109-2
	Compliance	NEC 2014 / NEC 2017 (optional)
	Utility interconnect	IEEE 1547.1-2005 / UL 1741 SA-Sept. 2016

[1] Values at 1.00•Vac nom and cos Φ= 1. Consult Power Electronics for derating curves.

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[4] Consult Power Electronics for Freemaq DC/DC connection configurations.

[5] Consult Power Electronics for other altitudes.

[6] Readings taken 1 meter from the back of the unit.

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Summary: Application - 8 of 31 (Exhibit C - Manufacturer Specifications) electronically filed by Christine M.T. Pirik on behalf of Birch Solar 1, LLC