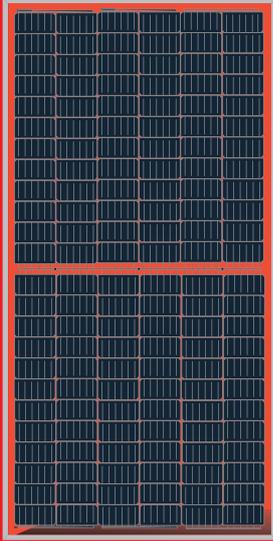


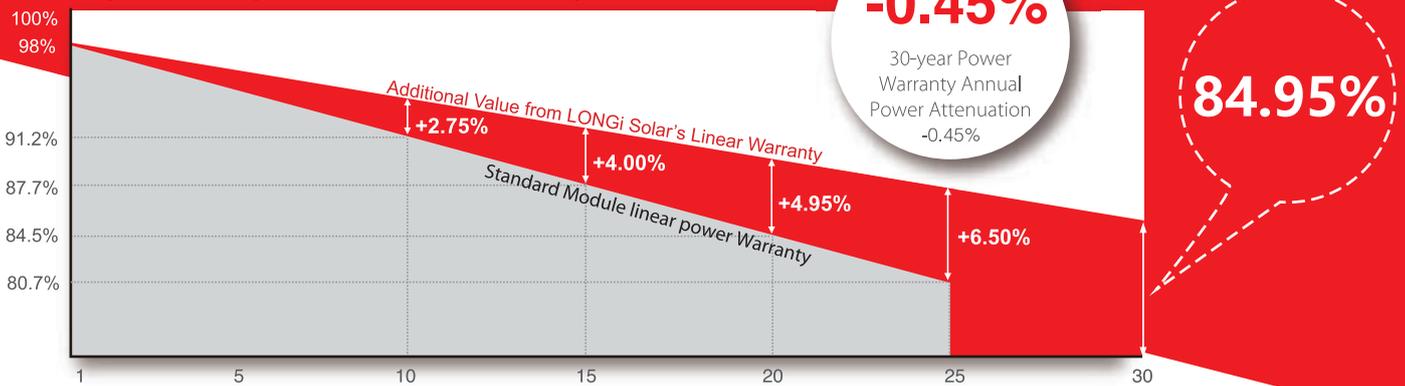
LR4-72HBD 415~435M

Hi-M04



**High Efficiency
Low LID Bifacial PERC with
Half-cut Technology**

10-year Warranty for Materials and Processing;
30-year Warranty for Extra Linear Power Output



Complete System and Product Certifications

IEC 61215, IEC61730, UL1703
 ISO 9001:2008: ISO Quality Management System
 ISO 14001: 2004: ISO Environment Management System
 TS62941: Guideline for module design qualification and type approval
 OHSAS 18001: 2007 Occupational Health and Safety



* Specifications subject to technical changes and tests. LONGi Solar reserves the right of interpretation.

Front side performance equivalent to conventional low LID mono PERC:

- High module conversion efficiency (up to 19.4%)
- Better energy yield with excellent low irradiance performance and temperature coefficient
- First year power degradation <2%

Bifacial technology enables additional energy harvesting from rear side (up to 25%)

Glass/glass lamination ensures 30 year product lifetime, with annual power degradation < 0.45%, 1500V compatible to reduce BOS cost

Solid PID resistance ensured by solar cell process optimization and careful module BOM selection

Reduced resistive loss with lower operating current

Higher energy yield with lower operating temperature

Reduced hot spot risk with optimized electrical design and lower operating current

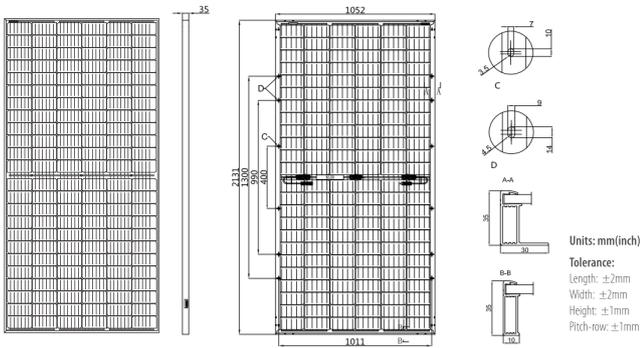
LONGi

Room 801, Tower 3, Lujiazui Financial Plaza, No.826 Century Avenue, Pudong Shanghai, 200120, China
 Tel: +86-21-80162606 E-mail: module@longi-silicon.com Facebook: www.facebook.com/LONGi Solar

Note: Due to continuous technical innovation, R&D and improvement, technical data above mentioned may be of modification accordingly. LONGi Solar have the sole right to make such modification at anytime without further notice; Demanding party shall request for the latest datasheet for such as contract need, and make it a consisting and binding part of lawful documentation duly signed by both parties.

LR4-72HBD 415~435M

Design (mm)



Mechanical Parameters

Cell Orientation: 144 (6×24)
 Junction Box: IP68, three diodes
 Output Cable: 4mm², 300mm in length,
 length can be customized
 Glass: Dual glass
 2.0mm tempered glass
 Frame: Anodized aluminum alloy frame
 Weight: 29.5kg
 Dimension: 2131×1052×35mm
 Packaging: 30pcs per pallet
 150pcs per 20'GP
 600pcs per 40'HC

Operating Parameters

Operational Temperature: -40℃ ~ +85℃
 Power Output Tolerance: 0 ~ +5 W
 Voc and Isc Tolerance: ±3%
 Maximum System Voltage: DC1500V (IEC / UL)
 Maximum Series Fuse Rating: 20A
 Nominal Operating Cell Temperature: 45±2℃
 Safety Class: Class II
 Fire Rating: UL type 3
 Bifaciality: Glazing≥70%

Electrical Characteristics

Test uncertainty for Pmax: ±3%

Model Number	LR4-72HBD-415M		LR4-72HBD-420M		LR4-72HBD-425M		LR4-72HBD-430M		LR4-72HBD-435M	
	STC	NOCT								
Maximum Power (Pmax/W)	415	308.6	420	312.3	425	316.0	430	319.7	435	323.5
Open Circuit Voltage (Voc/V)	49.0	45.6	49.2	45.8	49.4	46.0	49.6	46.2	49.8	46.4
Short Circuit Current (Isc/A)	10.89	8.82	10.96	8.87	11.02	8.93	11.09	8.98	11.16	9.04
Voltage at Maximum Power (Vmp/V)	40.6	37.7	40.8	37.9	41.0	38.1	41.2	38.2	41.4	38.4
Current at Maximum Power (Imp/A)	10.23	8.19	10.30	8.25	10.37	8.30	10.44	8.36	10.51	8.42
Module Efficiency(%)	18.5		18.7		19.0		19.2		19.4	

STC (Standard Testing Conditions): Irradiance 1000W/m², Cell Temperature 25℃, Spectra at AM1.5

NOCT (Nominal Operating Cell Temperature): Irradiance 800W/m², Ambient Temperature 20℃, Spectra at AM1.5, Wind at 1m/S

Electrical characteristics with different rear side power gain (reference to 425W front)

Pmax /W	Voc/V	Isc /A	Vmp/V	Imp /A	Pmax gain
446	49.4	11.58	41.0	10.88	5%
468	49.4	12.13	41.0	11.40	10%
489	49.5	12.68	41.1	11.92	15%
510	49.5	13.23	41.1	12.44	20%
531	49.5	13.78	41.1	12.96	25%

Temperature Ratings (STC)

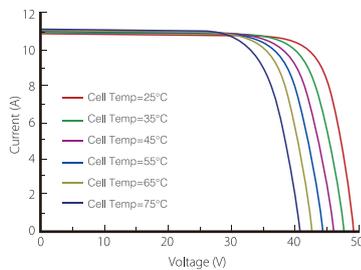
Temperature Coefficient of Isc	+0.060%/℃
Temperature Coefficient of Voc	-0.300%/℃
Temperature Coefficient of Pmax	-0.370%/℃

Mechanical Loading

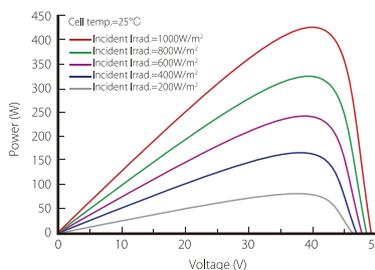
Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

I-V Curve

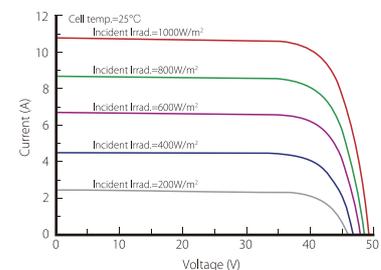
Current-Voltage Curve (LR4-72HBD-425M)



Power-Voltage Curve (LR4-72HBD-425M)



Current-Voltage Curve (LR4-72HBD-425M)



LONGI

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NX Horizon Self-Powered Tracker

Our most amazing tracker yet.

In our mission to make solar a mainstream energy source, NEXTracker has engineered the most intelligent and flexible tracking technology yet. Using sustainable design methods with outcomes that benefit people and the planet, we bring you: NX Horizon™.

NX Horizon (formerly referred to as the Self-Powered Tracker or SPT), brings self-contained motor power to each row, eliminating power wiring and trenching. Our advanced horizontal tracker has the widest rotational range available, lowest O&M costs, and requires far less power to operate than other trackers. By offering more powerful systems at a greater value, NEXTracker enables greater deployment of renewable energy worldwide.

NX Horizon key features and benefits include:

- Self-powered system with smart performance communications: Self-contained units on each row include a dedicated PV panel to provide power to the controller which drives the motor and hosts intelligent control electronics to position each tracker. With smart communications built in, NX Horizon systems can be accessed remotely, providing customers with a granular view to optimize tracker performance, operations and maintenance.
- Independent balanced rows with 120 degree rotational range: Each NX Horizon row has its own controlled motor with rotational range that delivers up to 2% more energy than typical linked row trackers. These agile, independent rows stow in less than 90 seconds to reduce wind forces

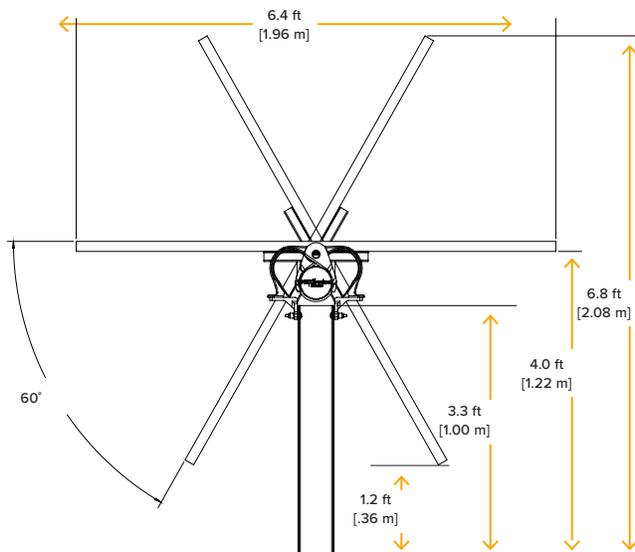
on the array, protecting the PV modules in harsh environments. NX Horizon solar trackers also have a mechanically balanced row design that aligns PV panels with the tracker's axis of rotation – which greatly reduces row torque, using less energy from the motor to track throughout the day.

- Self-grounded system with theft-proof fasteners: NX Horizon is the world's first horizontal tracker with an entirely self-grounded design. This means no separate bonding hardware is required. You save on material and associated costs by eliminating grounding washers, braided straps, bare copper wire, and grounding rods. What's more, we've designed our own fasteners that can only be removed with special tools – deterring PV theft.

NX Horizon Specifications

Tracking Technology	Horizontal single-axis balanced-mass tracker with independently-driven rows
Tracking Range	Up to 120° (± 60°)
Control System	1 Self-Powered Controller (SPC) per tracker; 1 Network Control Unit (NCU) per 100 SPCs
Communications	Wireless ZigBee® mesh network/SCADA; no communication wiring required
Drive System	One slew gear, 24 VDC motor and self-powered controller w/dedicated solar panel per row
DC Capacity	23-35kWp per tracker row, depending on panel type. Row length up to 90 panels.
System Voltage	1,500 volt or 1,500 volt
Power Consumption	No grid power required
Ground Coverage Ratio	Fully configurable by customer; typical range 33%-50%
Installation Method	Rapid field assembly, no welding required
Foundation Types	Compatible with all major foundation types (driven pier, concrete foundation, ground screw)
Standard Wind Design	100 mph/161 kph, 3 second gust per ASCE7-10; configurable for higher wind speeds
Safety Stowing	Automated wind and snow stowing with self-contained backup power; no external power required
Torsional Limiter	Included at each foundation/bearing for additional wind and snow load protection
Principal Materials	Galvanized and stainless steel
Grounding Method	Self-grounding structure; separate materials and labor not required
Compliance	Grounding/bonding: UL2703; structural design: ASCE7-10
Other Available Options	Snow and flood sensors
Warranty	10 years on structural components; 5 years on drive and control systems
Typical Dimensions	Height 2.1 m/6.8 ft (@ 60°), Width 2.0 m/6.4 ft, Length 85 m/283 ft

Typical 72-cell c-Si configuration: 85 m row with 80 panels mounted in portrait:



NEXTracker

6200 Paseo Padre Parkway
 Fremont, CA 94555 USA
 +1 510 270 2500
 nextracker.com

printed on post-consumer waste paper



HEM

UTILITY SCALE MV 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 the first inverter able to provide IP65 degree of protection with an air cooling system, and as a result reducing OPEX costs.

THE INNOVATIVE MEDIUM VOLTAGE CENTRAL STRING INVERTER





REAL TURN-KEY SOLUTION

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 turnkey solution that will reduce site design, installation and connections costs.

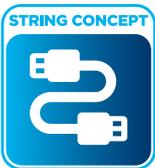


MV
SWITCHGEAR

MV
TRANSFORMER

STRING INVERTERS
CABINET

DC
RECOMBINER



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), being able to work with up to 6 different MPPTs, providing a perfect solution for irregular locations, where each area of the PV plant has a different production curve.

HEM is also available with a single MPPT, 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 output 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 IP65 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 IP65 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.



ROBUST DESIGN

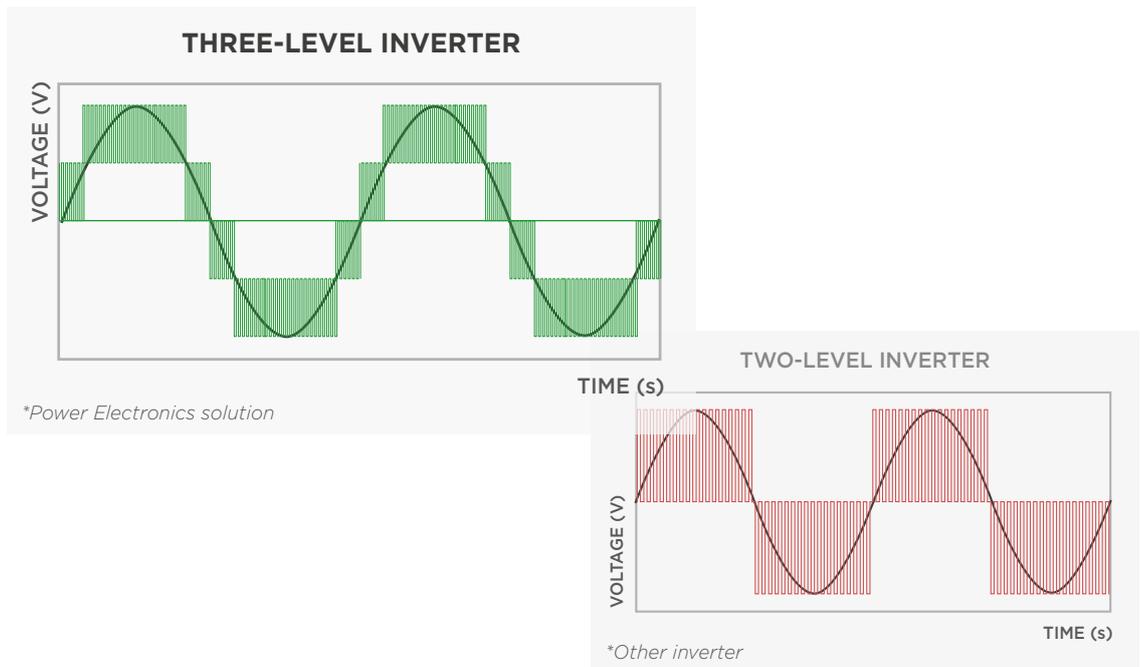
HEM inverter modules have a design life of greater than 30 years of operation in harsh environments and extreme weather conditions. HEM units are tested and ready to withstand conditions from the frozen Siberian tundra to the Californian Death Valley, featuring:

- 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.
- 50mm mineral 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.



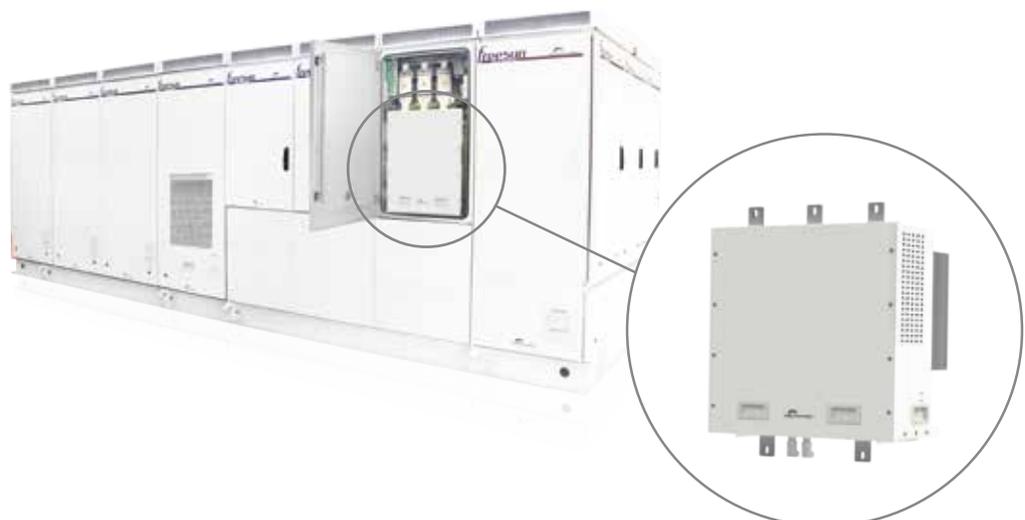
MULTILEVEL TOPOLOGY

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.



EASY TO SERVICE

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.





EASY TO MONITOR

The Freesun app is an easy way to monitor the status of Power Electronics inverters. All 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).



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 the maintenance. (patented)



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).



ECON MODE

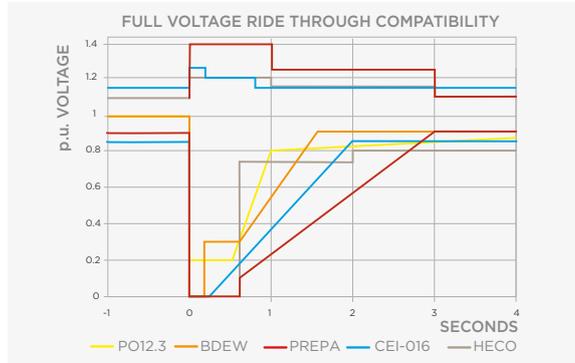
This innovative control mode allows increasing the efficiency of the MV transformer up to 25%, reducing the power consumption of the plant and therefore providing considerable savings.

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.

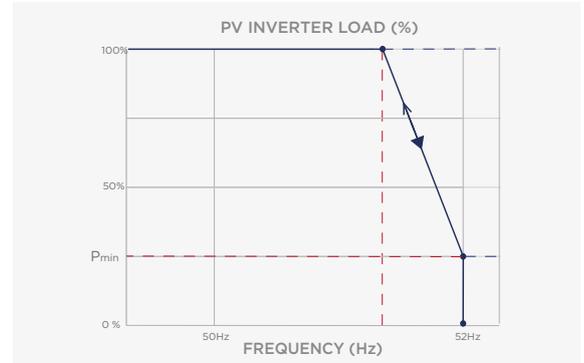


DYNAMIC GRID SUPPORT

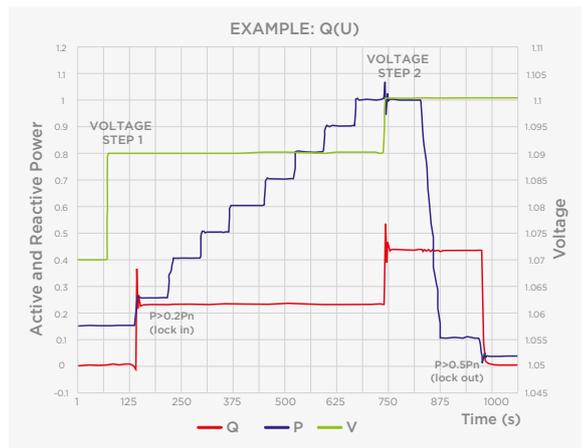
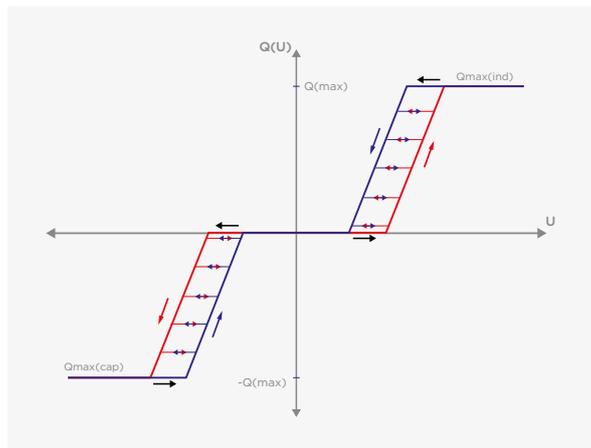
HEM firmware includes the latest utility interactive features (LVRT, OVRT, FRS, FRT, Anti-islanding, active and reactive power curtailment...), and can be configured to meet specific utility requirements.



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



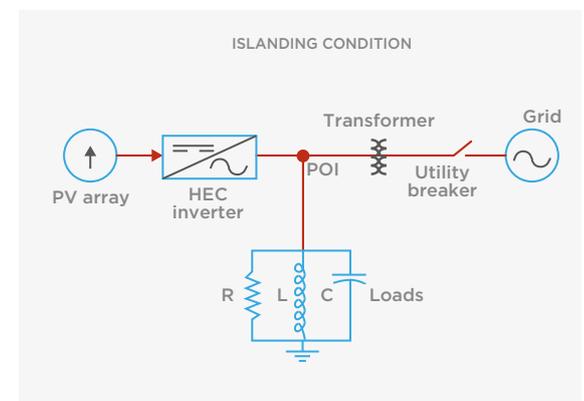
▲ **FRS (Frequency Regulation System).** Frequency droop algorithm curtails the active power along a preset characteristic curve supporting grid stabilization.



▲ **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.



▲ **FRT (Frequency Ride Through):** 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.

HEM

TECHNICAL CHARACTERISTICS

REFERENCE	FS3300M	
OUTPUT	AC Output Power(kVA/kW) @50°C ^[1]	3300
	AC Output Power(kVA/kW) @25°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 inputs ^[2]	Up to 36
	Max. DC continuous current (A)	3970
	Max. DC short circuit current (A)	6000
EFFICIENCY & AUXILIARY SUPPLY	Max. Efficiency PAC, nom (η)	98% including MV transformer (preliminary)
	Max. Power Consumption (KVA)	20
CABINET	Dimensions [WxDxH] (ft)	20x6.5x7 (preliminary)
	Type of ventilation	Forced air cooling
ENVIRONMENT	Degree of protection	NEMA3R - IP54 / IP65 available
	Permissible Ambient Temperature	-35°C ^[4] to +60°C / >50°C Active Power derating
	Relative Humidity	4% to 100% non condensing
	Max. Altitude (above sea level) ^[5]	1000m
	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	UL1741, CSA 22.2 No.1071-01, UL62109-1, IEC62109-1, IEC62109-2
	Compliance	NEC 2014 / NEC 2017 (optional)
	Utility interconnect	UL 1741SA-Sept. 2016 / IEEE 15471-2005

NOTES

[1] Values at 1.00•Vac nom and cos Φ=1. Consult Power Electronics for derating curves.
 [2] Depending on the project configuration.
 [3] Consult P-Q charts available: $Q(kVAR)=\sqrt{(S(kVA))^2-P(kW)^2}$.
 [4] Heating resistors kit option below -20°C.
 [5] Consult Power Electronics for other altitudes.
 [6] Readings taken 1 meter from the back of the unit.

HEM

TECHNICAL CHARACTERISTICS

REFERENCE	FS3225M	
OUTPUT	AC Output Power(kVA/kW) @50°C ^[1]	3225
	AC Output Power(kVA/kW) @25°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 inputs ^[2]	Up to 36
	Max. DC continuous current (A)	3970
	Max. DC short circuit current (A)	6000
EFFICIENCY & AUXILIARY SUPPLY	Max. Efficiency PAC, nom (η)	98% including MV transformer (preliminary)
	Max. Power Consumption (KVA)	20
CABINET	Dimensions [WxDxH] (ft)	20x6.5x7 (preliminary)
	Type of ventilation	Forced air cooling
ENVIRONMENT	Degree of protection	NEMA3R - IP54 / IP65 available
	Permissible Ambient Temperature	-35°C ^[4] to +60°C / >50°C Active Power derating
	Relative Humidity	4% to 100% non condensing
	Max. Altitude (above sea level) ^[5]	1000m
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	UL1741, CSA 22.2 No.1071-01, UL62109-1, IEC62109-1, IEC62109-2
	Compliance	NEC 2014 / NEC 2017 (optional)
	Utility interconnect	UL 1741SA-Sept. 2016 / IEEE 15471-2005

NOTES

[1] Values at 1.00•Vac nom and cos Φ=1. Consult Power Electronics for derating curves.
 [2] Depending on the project configuration.
 [3] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA))^2-P(kW)^2}$.
 [4] Heating resistors kit option below -20°C.
 [5] Consult Power Electronics for other altitudes.
 [6] Readings taken 1 meter from the back of the unit.

HEM

TECHNICAL CHARACTERISTICS

REFERENCE	FS3150M	
OUTPUT	AC Output Power(kVA/kW) @50°C ^[1]	3150
	AC Output Power(kVA/kW) @25°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 inputs ^[2]	Up to 36
	Max. DC continuous current (A)	3970
	Max. DC short circuit current (A)	6000
EFFICIENCY & AUXILIARY SUPPLY	Max. Efficiency PAC, nom (η)	98% including MV transformer (preliminary)
	Max. Power Consumption (KVA)	20
CABINET	Dimensions [WxDxH] (ft)	20x6.5x7 (preliminary)
	Type of ventilation	Forced air cooling
ENVIRONMENT	Degree of protection	NEMA3R - IP54 / IP65 available
	Permissible Ambient Temperature	-35°C ^[4] to +60°C / >50°C Active Power derating
	Relative Humidity	4% to 100% non condensing
	Max. Altitude (above sea level) ^[5]	1000m
	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	UL1741, CSA 22.2 No.1071-01, UL62109-1, IEC62109-1, IEC62109-2
	Compliance	NEC 2014 / NEC 2017 (optional)
	Utility interconnect	UL 1741SA-Sept. 2016 / IEEE 15471-2005

NOTES

[1] Values at 1.00•Vac nom and cos Φ=1. Consult Power Electronics for derating curves.
 [2] Depending on the project configuration.
 [3] Consult P-Q charts available: $Q(kVAR)=\sqrt{(S(kVA))^2-P(kW)^2}$.
 [4] Heating resistors kit option below -20°C.
 [5] Consult Power Electronics for other altitudes.
 [6] Readings taken 1 meter from the back of the unit.

HEM

TECHNICAL CHARACTERISTICS

REFERENCE	FS3075M	
OUTPUT	AC Output Power(kVA/kW) @50°C ^[1]	3075
	AC Output Power(kVA/kW) @25°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 inputs ^[2]	Up to 36
	Max. DC continuous current (A)	3970
	Max. DC short circuit current (A)	6000
EFFICIENCY & AUXILIARY SUPPLY	Max. Efficiency PAC, nom (η)	98% including MV transformer (preliminary)
	Max. Power Consumption (KVA)	20
CABINET	Dimensions [WxDxH] (ft)	20x6.5x7 (preliminary)
	Type of ventilation	Forced air cooling
ENVIRONMENT	Degree of protection	NEMA3R - IP54 / IP65 available
	Permissible Ambient Temperature	-35°C ^[4] to +60°C / >50°C Active Power derating
	Relative Humidity	4% to 100% non condensing
	Max. Altitude (above sea level) ^[5]	1000m
	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	UL1741, CSA 22.2 No.1071-01, UL62109-1, IEC62109-1, IEC62109-2
	Compliance	NEC 2014 / NEC 2017 (optional)
	Utility interconnect	UL 1741SA-Sept. 2016 / IEEE 15471-2005

NOTES

[1] Values at 1.00•Vac nom and cos Φ=1. Consult Power Electronics for derating curves.
 [2] Depending on the project configuration.
 [3] Consult P-Q charts available: $Q(kVAR)=\sqrt{(S(kVA))^2-P(kW)^2}$.
 [4] Heating resistors kit option below -20°C.
 [5] Consult Power Electronics for other altitudes.
 [6] Readings taken 1 meter from the back of the unit.

HEM

TECHNICAL CHARACTERISTICS

REFERENCE	FS3000M	
OUTPUT	AC Output Power(kVA/kW) @50°C ^[1]	3000
	AC Output Power(kVA/kW) @25°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 inputs ^[2]	Up to 36
	Max. DC continuous current (A)	3970
	Max. DC short circuit current (A)	6000
EFFICIENCY & AUXILIARY SUPPLY	Max. Efficiency PAC, nom (η)	98% including MV transformer (preliminary)
	Max. Power Consumption (KVA)	20
CABINET	Dimensions [WxDxH] (ft)	20x6.5x7 (preliminary)
	Type of ventilation	Forced air cooling
ENVIRONMENT	Degree of protection	NEMA3R - IP54 / IP65 available
	Permissible Ambient Temperature	-35°C ^[4] to +60°C / >50°C Active Power derating
	Relative Humidity	4% to 100% non condensing
	Max. Altitude (above sea level) ^[5]	1000m
	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	UL1741, CSA 22.2 No.1071-01, UL62109-1, IEC62109-1, IEC62109-2
	Compliance	NEC 2014 / NEC 2017 (optional)
	Utility interconnect	UL 1741SA-Sept. 2016 / IEEE 15471-2005

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[1] Values at 1.00•Vac nom and cos Φ=1. Consult Power Electronics for derating curves.
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 [6] Readings taken 1 meter from the back of the unit.

SUNNY CENTRAL 2200 / 2500-EV / 2750-EV

SC-2200-10 / SC-2500-EV-10 / SC-2750-EV-10



Efficient

- More power per cubic meter
- Up to 4 inverters can be transported in one standard shipping container
- DC/AC Over-dimensioning up to 250%*

Robust

- Proven high-precision air-cooling system for intelligent, effective cooling
- Can be installed outdoors anywhere in the world in any ambient condition

Flexible

- Conforms to all known grid requirements worldwide
- Provides Q on demand
- Available as a stand-alone or turn-key solution with medium-voltage block

Easy to Use

- Improved DC connection area
- Bay for connecting customer equipment
- Integrated voltage supply for internal consumption and external loads

SUNNY CENTRAL 2200 / 2500-EV / 2750-EV

The new Sunny Central: maximum power density and integration

With an output of up to 2750 kVA and system voltage of 1000 volts DC or 1500 volts DC, SMA's central inverters allow for more efficient system design. An integrated transformer and additional space is available for the installation of customer equipment. The Sunny Central has been optimized for outdoor installation. The air cooling system OptiCool™ ensures smooth operation, even in extreme ambient temperatures. Sand and dust particles are effectively kept away. The Sunny Central is the central component of SMA Utility Power Systems. In combination with the medium-voltage block, DC technology, power plant controlling system and SMA Service, it is also available as compact platform solution.

* depending on location and module technology (1000 Vdc to 200%)

SUNNY CENTRAL 1000 V

Technical Data	Sunny Central 2200
Input (DC)	
MPP voltage range V_{DC} (at 25 °C / at 50 °C)	570 to 950 V / 850 V
Min. input voltage $V_{DC, min}$ / Start voltage $V_{DC, Start}$	545 V / 645 V
Max. input voltage $V_{DC, max}$	1100 V
Max. input current $I_{DC, max}$ (at 25 °C / at 50 °C)	3960 A / 3600 A
Max. short-circuit current $I_{DC, sc}$	6400 A
Number of DC inputs	32
Max. number of DC cables per DC input (for each polarity)	2 x 800 kcmil, 2 x 400 mm ²
Integrated zone monitoring	○
Available DC fuse sizes (per input)	200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A
Output (AC)	
Nominal AC power at $\cos \varphi = 1$ (at 25 °C / at 40 °C / at 50 °C)	2200 kVA / 2080 kVA / 2000 kVA
Nominal AC power at $\cos \varphi = 0.8$ (at 25 °C / at 40 °C / at 50 °C)	1760 kW / 1664 kW / 1600 kW
Nominal AC current $I_{AC, nom} = \text{Max. output current } I_{AC, max}$	3300 A
Max. total harmonic distortion	< 3% at nominal power
Nominal AC voltage / nominal AC voltage range ¹⁾⁷⁾	385 V / 308 V to 462 V
AC power frequency / range	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz
Min. short-circuit ratio at the AC terminals	> 2
Power factor at rated power / displacement power factor adjustable ⁷⁾	1 / 0.8 overexcited to 0.8 underexcited ⁸⁾
Efficiency	
Max. efficiency / European efficiency / CEC efficiency ²⁾	98.6% / 98.4% / 98.0%
Protective Devices	
Input-side disconnection point	DC load break switch
Output-side disconnection point	AC circuit breaker
DC overvoltage protection	Surge arrester, type I
AC overvoltage protection (optional)	Surge arrester, class I
Lightning protection (according to IEC 62305-1)	Lightning Protection Level III
Ground-fault monitoring / remote ground-fault monitoring	○ / ○
Insulation monitoring	○
Degree of protection: electronics / air duct / connection area (as per IEC 60529)	IP65 / IP34 / IP34
General Data	
Dimensions (W / H / D)	2780 / 2318 / 1588 mm (109.4 / 91.3 / 62.5 inch)
Weight	< 3400 kg / < 7496 lb
Self-consumption (max. ³⁾ / partial load ⁴⁾ / average ⁵⁾	< 8100 W / < 1800 W / < 2000 W
Self-consumption (standby)	< 300 W
Internal auxiliary power supply	Integrated 8.4 kVA transformer
Operating temperature range ⁷⁾	-25 °C to 60 °C / -13 °F to 140 °F
Noise emission ⁶⁾	66.4 dB(A)
Temperature range (standby)	-40 °C to 60 °C / -40 °F to 140 °F
Temperature range (storage)	-40 °C to 70 °C / -40 °F to 158 °F
Max. permissible value for relative humidity (condensing / non-condensing)	95% to 100% (2 month/year) / 0% to 95%
Maximum operating altitude above MSL ⁷⁾ 2000 m / 3000 m / 4000 m	● / ○ / ○ (earlier temperature-dependent derating)
Fresh air consumption	6500 m ³ /h
Features	
DC connection	Terminal lug on each input (without fuse)
AC connection	With busbar system (three busbars, one per line conductor)
Communication	Ethernet, Modbus Master, Modbus Slave
Communication with SMA string monitor (transmission medium)	Modbus TCP / Ethernet (FO MM, Cat-5)
Enclosure / roof color	RAL 9016 / RAL 7004
Display	● Indicator lights / ○ HMI touchscreen (10.1")
Supply transformer for external loads	○ (2.5 kVA)
Standards and directives complied with	CE, IEC / EN 62109-1, IEC / EN 62109-2, UL1741, BDEW-MSRL, IEEE1547, UL 840 Cat. IV, Arrêté du 23/04/08 IEC / EN 61000-6-4, IEC / EN 61000-6-2, EN 55022, CISPR 22:2008 modified class A, FCC Part 15 Class A VDI/VDE 2862 page 2, DIN EN ISO 9001
EMC standards	
Quality standards and directives complied with	
● Standard features ○ Optional	
Type designation	SC-2200-10

- 1) At nominal AC voltage < 385 V, nominal AC power decreases in the same proportion
- 2) Efficiency measured with internal power supply
- 3) Self-consumption at rated operation
- 4) Self-consumption at < 75% Pn at 25 °C
- 5) Self-consumption averaged out from 5% to 100% Pn at 25 °C

- 6) Sound pressure level at a distance of 10 m
- 7) Values apply only to inverters. Permissible values for SMA MV solutions from SMA can be found in the corresponding data sheets.
- 8) Depending on the DC voltage

SUNNY CENTRAL 1500 V

Technical Data	Sunny Central 2500-EV	Sunny Central 2750-EV
Input (DC)		
MPP voltage range V_{DC} (at 25 °C / at 50 °C)	800 V to 1425 V / 778 V to 1275 V	877 V to 1425 V / 849 V to 1275 V
Min. input voltage $V_{DC, min}$ / Start voltage $V_{DC, Start}$	778 V / 928 V	849 V / 999 V
Max. input voltage $V_{DC, max}$	1500 V	1500 V
Max. input current $I_{DC, max}$ (at 25 °C / at 50 °C)	2956 A / 2700 A	2956 A / 2914 A
Max. short-circuit current rating	6400 A	6400 A
Number of DC inputs	32	32
Max. number of DC cables per DC input (for each polarity)	2 x 800 kcmil, 2 x 400 mm ²	2 x 800 kcmil, 2 x 400 mm ²
Integrated zone monitoring	○	○
Available DC fuse sizes (per input)	200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A	
Output (AC)		
Nominal AC power at $\cos \varphi = 1$ (at 25 °C / at 40 °C / at 50 °C)	2500 kVA / 2350 kVA / 2250 kVA	2750 kVA / 2600 kVA / 2500 kVA
Nominal AC power at $\cos \varphi = 0.8$ (at 25 °C / at 40 °C / at 50 °C)	2000 kW / 1880 kW / 1800 kW	2200 kW / 2080 kW / 2000 kW
Nominal AC current $I_{AC, nom} = \text{Max. output current } I_{AC, max}$	2646 A	2674 A
Max. total harmonic distortion	< 3% at nominal power	< 3% at nominal power
Nominal AC voltage / nominal AC voltage range ^{1) 8)}	550 V / 440 V to 660 V	600 V / 480 V to 690 V
AC power frequency	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz
Min. short-circuit ratio at the AC terminals	> 2	> 2 ⁹⁾
Power factor at rated power / displacement power factor adjustable ⁸⁾	● 1 / 0.8 overexcited to 0.8 underexcited ¹⁰⁾ ○ 1 / 0.0 overexcited to 0.0 underexcited ¹⁰⁾	
Efficiency		
Max. efficiency ²⁾ / European efficiency ²⁾ / CEC efficiency ³⁾	98.6% / 98.3% / 98.0%	98.7% / 98.5% / 98.5%
Protective Devices		
Input-side disconnection point	DC load-break switch	
Output-side disconnection point	AC circuit breaker	
DC overvoltage protection	Surge arrester, type I	
AC overvoltage protection (optional)	Surge arrester, class I	
Lightning protection (according to IEC 62305-1)	Lightning Protection Level III	
Ground-fault monitoring / remote ground-fault monitoring	○ / ○	
Insulation monitoring	○	
Degree of protection: electronics / air duct / connection area (as per IEC 60529)	IP65 / IP34 / IP34	
General Data		
Dimensions (W / H / D)	2780 / 2318 / 1588 mm (109.4 / 91.3 / 62.5 inch)	
Weight	< 3400 kg / < 7496 lb	
Self-consumption (max. ⁴⁾ / partial load ⁵⁾ / average ⁶⁾	< 8100 W / < 1800 W / < 2000 W	
Self-consumption (standby)	< 370 W	
Internal auxiliary power supply	Integrated 8.4 kVA transformer	
Operating temperature range ⁸⁾	-25 to 60 °C / -13 to 140 °F	
Noise emission ⁷⁾	64,3 dB(A)	
Temperature range (standby)	-40 to 60 °C / -40 to 140 °F	
Temperature range (storage)	-40 to 70 °C / -40 to 158 °F	
Max. permissible value for relative humidity (condensing / non-condensing)	95% to 100% (2 month / year) / 0% to 95%	
Maximum operating altitude above MSL ⁸⁾ 1000 m / 2000 m / 3000 m	● / ○ / ○ (earlier temperature-dependent derating)	
Fresh air consumption	6500 m ³ /h	
Features		
DC connection	Terminal lug on each input (without fuse)	
AC connection	With busbar system (three busbars, one per line conductor)	
Communication	Ethernet, Modbus Master, Modbus Slave	
Communication with SMA string monitor (transmission medium)	Modbus TCP / Ethernet (FO MM, Cat-5)	
Enclosure / roof color	RAL 9016 / RAL 7004	
Display	● Identifier lights / ○ HMI touchscreen (10.1") ○ (2.5 kVA)	
Supply transformer for external loads	○ (2.5 kVA)	
Standards and directives complied with	CE, IEC / EN 62109-1, IEC / EN 62109-2, BDEW-MSRL, IEEE1547, Arrêté du 23/04/08	
EMC standards	EN 55011:2011-4, IEC / EN 61000-6-2, EN 55022, CISPR 22:2008 modified class A, FCC Part 15 Class A	
Quality standards and directives complied with	VDI/VDE 2862 page 2, DIN EN ISO 9001	
● Standard features ○ Optional		
Type designation	SC-2500-EV-10	SC-2750-EV-10

1) At nominal AC voltage, nominal AC power decreases in the same proportion

2) Efficiency measured without internal power supply

3) Efficiency measured with internal power supply

4) Self-consumption at rated operation

5) Self-consumption at < 75% Pn at 25 °C

6) Self-consumption averaged out from 5% to 100% Pn at 25 °C

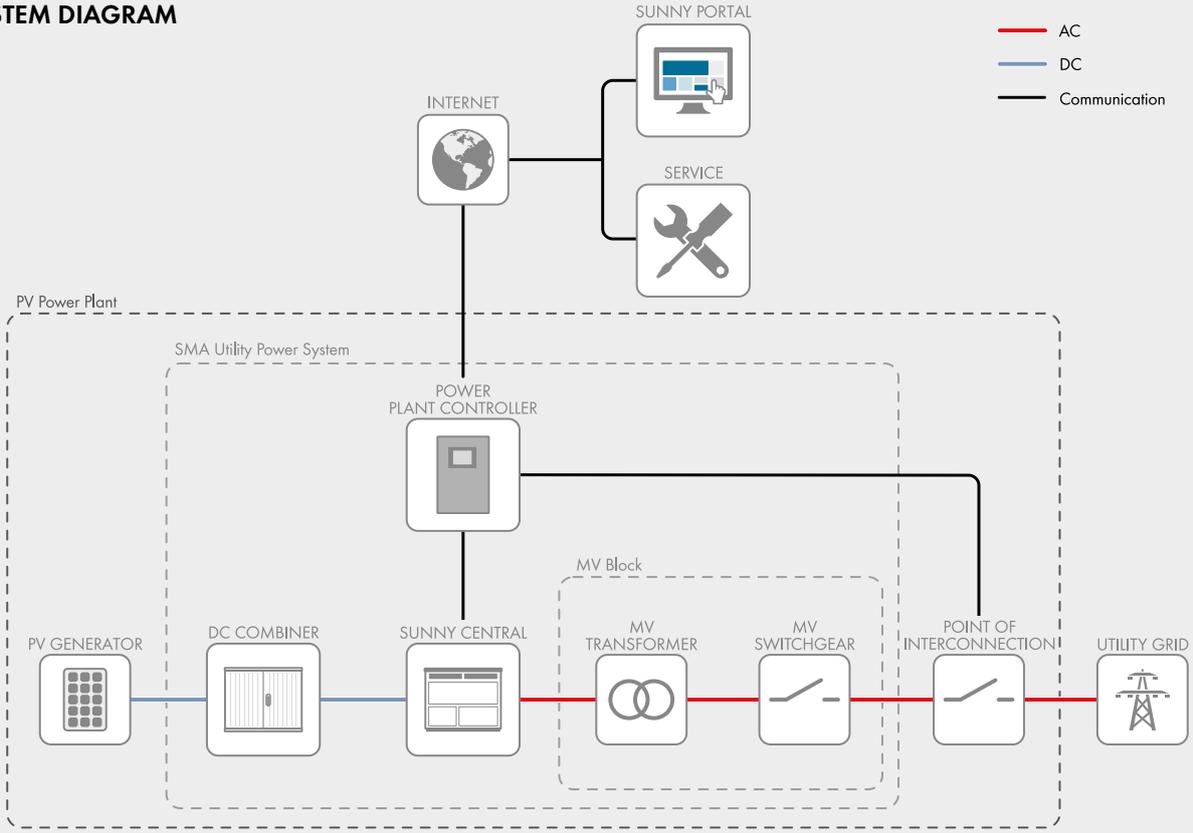
7) Sound pressure level at a distance of 10 m

8) Values apply only to inverters. Permissible values for SMA MV solutions from SMA can be found in the corresponding data sheets.

9) A short-circuit ratio of < 2 requires a special approval from SMA

10) Depending on the DC voltage

SYSTEM DIAGRAM



TEMPERATURE BEHAVIOR (at $\cos \phi = 1$)

