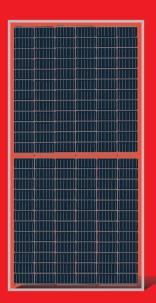
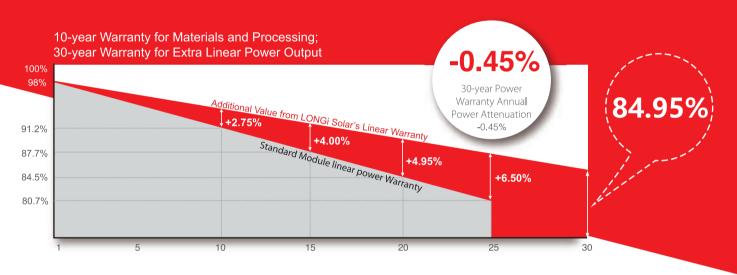
APPENDIX B PROPOSAL MAPS AND DRAWINGS



LR4-72HBD **415~435M**



High Efficiency Low LID Bifacial PERC with Half-cut Technology



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



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)

Units: mm(inch) Tolerance: Length: ±2mm Height: ±2mm Pitch-row: ±imm

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°C ~+85°C

Power Output Tolerance: 0~+5 W

Voc and Isc Tolerance: ±3%

 ${\bf Maximum\,System\,Voltage:\,DC1500V\,(IEC/UL)}$

Maximum Series Fuse Rating: 20A

Nominal Operating Cell Temperature: 45±2 $^{\circ}\mathrm{C}$

Safety Class: Class II

Fire Rating: UL type 3

Bifaciality: Glazing≥70%

Electrical Characteristics								Test unc	ertainty for P	max: ±3'
Model Number	LR4-72H	BD-415M	LR4-72H	BD-420M	LR4-72H	BD-425M	LR4-72H	BD-430M	LR4-72HE	BD-435N
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOC
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	1.5	18	3.7	1	9.0	19	9.2	19	9.4
STC (Standard Testing Conditions): Irradiance	2 1000W/m², C	ell Tempera	ature 25°C,	Spectra at	AM1.5					

NOCT (Nominal Operating Cell Temperature): Irradiance 800W/m², Ambient Temperature 20 C, 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%

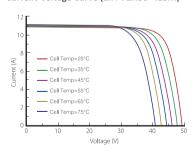
Temperature Ratings (STC)

Mechanical Loading

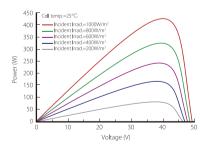
Temperature Coefficient of Isc	+0.060%/°C	Front Side Maximum Static Loading	5400Pa
Temperature Coefficient of Voc	-0.300%/¯C	Rear Side Maximum Static Loading	2400Pa
Temperature Coefficient of Pmax	-0.370%/°C	Hailstone Test	25mm Hailstone at the speed of 23m/s

I-V Curve

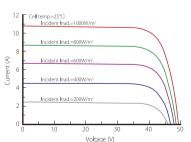
Current-Voltage Curve (LR4-72HBD-425M)



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

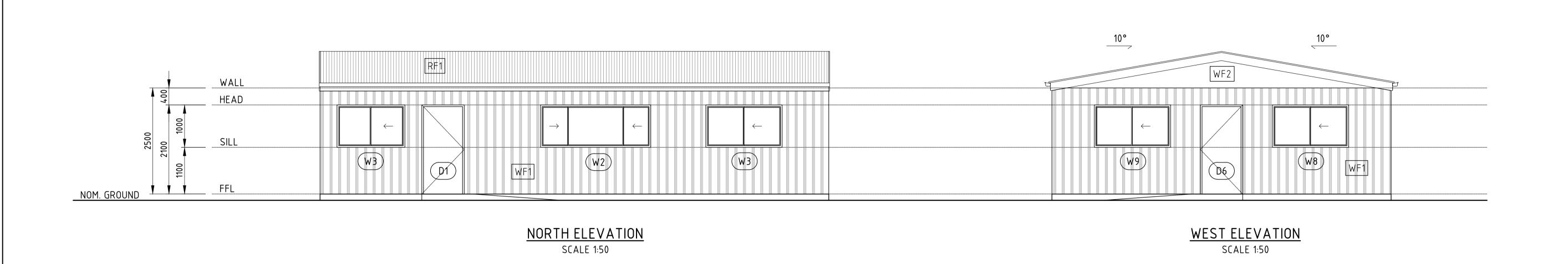


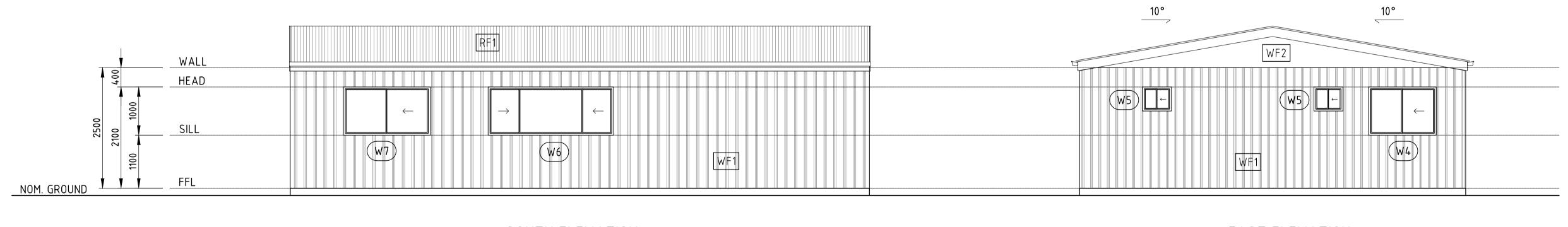
Current-Voltage Curve (LR4-72HBD-425M)



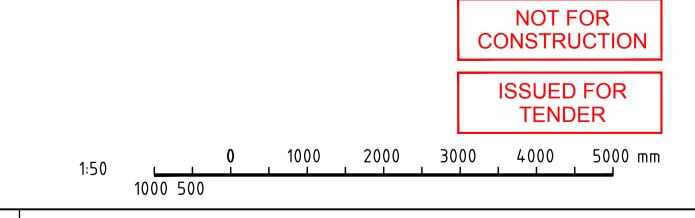


Note: Due to continuous technical innovation, R&D and improvement, technical data above mentioned may be of modification accordingly. LONGi Solar have the sole right to make such modification at anytime without further notice; Demanding party shall request for the latest datasheet for such as contract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









-DRW-					331		
-DOWNER	DO NOT SCALE FROM DRAWING					CLIENT: NEOEN	
33010	PLEASE NOTE					DRAWN BY: DATE:	DESIGNED BY:
DWG\	1. Drawings with the suffix "T" in the revision box are for Tender Purposes					R.RIVERSON 05.09.2018	C.TARMEY
SF	only. Downer Utilities (Downer Utilities Pty Ltd) reserves the right to amend any information on these drawings post Tender Award.	INECEN			Downer	DRG. CHECKED BY: DATE:	DES. CHECKED BY:
Σ N	2. The information contained herein remains the property of Downer		B PRELIMINARY	RR WC OD 05.09.1		R.McKINLEY 05.09.2018	O.DRANSFIELD
13301	Utilities and is to be used only in conjunction with the performance of work for Downer Utilities. Reproduction in whole or part without written		A PRELIMINARY	MOC RC RM 27.06.1		CAD FILE No:	APPROVED:
بة ا	permission is expressly forbidden.		REV REVISION DESCRIPTION	DRAWN APPR'D CHECKED DATE		133010-D0WNER-DRW-BD-3032.dwg	W.CROCOMBE

CLIENT: NEOEN				PROJECT:	NUMURKAH S	SOLAR FARM	
DRAWN BY:	DATE:	DESIGNED BY:	DATE:	TITLE:			SHEET SIZE
R.RIVERSON	05.09.2018	C.TARMEY	05.09.2018		MAINTENANCE BUILDIN	G	A 1
DRG. CHECKED BY:	DATE:	DES. CHECKED BY:	DATE:	ELEVATIONS			A1
R.McKINLEY	05.09.2018	O.DRANSFIELD	05.09.2018	PROJECT ID	CREATING ORGANISATION	DRAWING No.	REVISION
CAD FILE No:		APPROVED:	DATE:	133010	DOWNER	DRW-BD-3032	R
133010-DOWNER-DRW-B	D-3032.dwg	W.CROCOMBE	05.09.2018	טוטכנו	DOWNLK	אר אר – חר אי ארי	D

PLOT DATE: 05 September, 2018 - 9:30am



Bifacial Module Mounting Solution

One of the most promising product technology trends in solar today is the bifacial PV module. Under the right conditions, bifaciality allows the absorption of sunlight on the backside of the module, creating the potential for significant additional power production and lower overall levelized cost of energy (LCOE) compared to standard monofacial modules. The benefits of bifacial module technology can be significantly amplified when mounted on NEXTracker's NX Horizon™ self-powered, independent-row single-axis solar trackers.

The optimal site conditions for bifacial modules used with trackers are a combination of the following:

- · High albedo (ground reflectance).
- · Low to moderate ground cover ratio.
- Optimized tracker rear-side view factor, including bifacial specific array heights.

Maximized Rear-Side Irradiance

Since NX Horizon is built at rotation-axis elevations up to 100% of the total PV panel width, its large height-to-width aspect ratio maximizes module rear-side irradiance and helps maintain consistent irradiance along the underside of the modules, something which is difficult and costly to accomplish with larger-format trackers. To help customers select the most optimal array elevation for their projects,

NEXTracker performs a site-specific analysis comparing the increased energy production versus added foundation costs for a range of elevations.

Optimized Mounting Rails

NX Horizon trackers are now available with bifacial-optimized mounting rails, which are designed to enhance rear-side irradiance and are compatible with other innovative technologies, such as modules featuring half-cut cells and center busbar architectures. With increased distance between the PV panel and the round torque tubes, back-side shadowing is minimal. Added clearance to the tubes ensures that in the case of center junction-box modules, no contact occurs, even in severe wind conditions. These rails also include a center gap to enable easy DC cable management and time-efficient installation.

Field tests have shown that mono-PERC bifacial PV modules can generate as much as 14% more energy when paired with NX Horizon.



No Direct Shading from Bearings and Piers

NX Horizon's structural design is bifacial-friendly, with the tracker incorporating bearing and pier gaps for the PV panels, so that they do not cover or shadow the top of bearings, piers or slew gear. This design feature eliminates direct shading and greatly reduces mismatch losses.

Bifacial + TrueCapture = A Winning Combination

Not only does the performance of bifacial modules excel when mounted on NX Horizon trackers, the combination can benefit from even better energy harvest when connected with NEXTracker's TrueCaptureTM smart control system. Bifacial energy gains are additive to TrueCapture, which translates to as much as 20% more energy harvest than traditional single-axis trackers using monofacial modules—as well as lower system LCOE. TrueCapture's diffuse-light tracking mode matches especially well with bifacial technology, with algorithms tuned to optimize both front- and back-side irradiance.



Contact your NX sales representative to learn more about our bifacial module mounting solution: salesteam@nextracker.com

SUNNY CENTRAL 2200 / 2475 / 2500-EV / 2750-EV / 3000-EV





Efficient

- Up to 4 inverters can be transported in one standard shipping container
- Overdimensioning up to 225% is possible
- Full power at ambient temperatures of up to 35°C

Robust

- Intelligent air cooling system
 OptiCool for efficient cooling
- Suitable for outdoor use in all climatic ambient conditions worldwide

Flexible

- Conforms to all known grid requirements worldwide
- Q on demand
- Available as a single device or turnkey solution, including medium-voltage block

Easy to Use

- Improved DC connection area
- Connection area for customer equipment
- Integrated voltage support for internal and external loads

SUNNY CENTRAL 2200 / 2475 / 2500-EV / 2750-EV / 3000-EV

The new Sunny Central: more power per cubic meter

With an output of up to 3000 kVA and system voltages of 1100 V DC or 1500 V DC, the SMA central inverter allows for more efficient system design and a reduction in specific costs for PV power plants. A separate voltage supply and additional space are available for the installation of customer equipment. True 1500 V technology and the intelligent cooling system OptiCool ensure smooth operation even in extreme ambient temperature as well as a long service life of 25 years.

SUNNY CENTRAL 1000 V

Technical Data	Sunny Central 2200	Sunny Central 2475*		
nput (DC)				
MPP voltage range V _{DC} (at 25 °C / at 35 °C / at 50 °C)	570 to 950 V / 800 V / 800 V	638 V to 950 V / 800 V / 800		
Min. input voltage V _{DC. min} / Start voltage V _{DC. Start}	545 V / 645 V	614 V / 714 V		
Max. input voltage V _{DC, max}	1100 V	1100 V		
Max. input current I _{DC, max} (at 35°C / at 50°C)	3960 A / 3600 A	3960 A / 3600 A		
Max. short-circuit current I _{DC. sc}	6400 A	6400 A		
Number of DC inputs		(32 single pole fused)		
Max. number of DC cables per DC input (for each polarity)	•	, 2 x 400 mm ²		
)		
ntegrated zone monitoring		0 A, 400 A, 450 A, 500 A		
Available DC fuse sizes (per input)	200 A, 250 A, 315 A, 35	0 A, 400 A, 430 A, 300 A		
Output (AC)	0000 1141 / 0000 1141	0.475 1.44 4.005 1.44		
Nominal AC power at $\cos \varphi = 1$ (at 35°C / at 50°C)	2200 kVA / 2000 kVA	2475 kVA / 2250 kVA		
Nominal AC power at cos φ =0.8 (at 35°C / at 50°C)	1760 kW / 1600 kW	1980 kW / 1800 kW		
Nominal AC current $I_{AC, nom} = Max$. output current $I_{AC, max}$	3300 A	3300 A		
Max. total harmonic distortion	< 3% at nominal power	< 3% at nominal power		
Nominal AC voltage / nominal AC voltage range ^{1) 8)}	385 V / 308 V to 462 V	434 V / 347 V to 521 V		
AC power frequency / range	50 Hz / 47	Hz to 53 Hz		
		Hz to 63 Hz		
Min. short-circuit ratio at the AC terminals ⁹		2		
Power factor at rated power / displacement power factor adjustable ^{8] 10]}		d to 0.8 underexcited d to 0.0 underexcited		
Efficiency	3 1 / 0.0 Overexene	a to 0.0 underexened		
Max. efficiency ² / European efficiency ² / CEC efficiency ³	98.6% / 98.4% / 98.0%	98.6% / 98.4% / 98.0%		
Protective Devices				
nput-side disconnection point	DC load b	reak switch		
Output-side disconnection point	AC circui	it 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	0/0			
Insulation monitoring				
Degree of protection: electronics / air duct / connection area (as per IEC 60529)	IP65 / IP3	34 / IP34		
General Data				
Dimensions (W / H / D)	2780 / 2318 / 1588 mm (109.4 / 91.3 / 62.5 inc			
Weight	< 3400 kg / < 7496 lb			
Self-consumption (max.4) / partial load ⁵⁾ / average ⁶⁾	< 8100 W / < 1800 W / < 2000 W			
Self-consumption (standby)	< 30	0 W		
nternal auxiliary power supply	Integrated 8.4	kVA transformer		
Operating temperature range ⁸⁾	-25°C to 60°C	/ -13°F to 140°F		
Noise emission ⁷		dB(A)		
Femperature range (standby)		/ –40°F to 140°F		
	•	/ –40°F to 158°F		
Femperature range (storage)	·			
Max. permissible value for relative humidity (condensing / non-condensing)		th/year) / 0% to 95%		
Maximum operating altitude above MSL ⁸ 1000 m / 2000 m ¹¹ / 3000 m ¹¹ / 4000 m ¹¹	· · ·	/ 0 / 0		
Fresh air consumption	6500	m³/h		
Features				
DC connection	Terminal lug on each	• •		
AC connection	With busbar system (three bu	sbars, one per line conductor)		
Communication	Ethernet, Modbus M	aster, Modbus Slave		
Communication with SMA string monitor (transmission medium)	Modbus TCP / Ether	rnet (FO MM, Cat-5)		
Enclosure / roof color	RAL 9016 / RAL 7004			
Supply transformer for external loads	○ (2.5 kVA)			
Standards and directives complied with	CE, IEC / EN 62109-1, IEC / EN			
		rêté du 23/04/08		
EMC standards	IEC / EN 61000-6-4, IEC / EN 61000-6-2, EN 55022, IEC 62920 FCC Part 15 Class A, Cispr 11, DIN EN55011:2017			
Quality standards and directives complied with	VDI/VDE 2862 page			
	4 DI/ 4 DE 2002 page	2, 5114 [14 150 700]		
● Standard features ○ Optional * preliminary				
Type designation	SC-2200-10	SC-2475-10		
rype designation	30-2200-10	JC-24/ J-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
- 11) Earlier temperature-dependent de-rating and reduction of DC open-circuit voltage

SUNNY CENTRAL 1500 V

Technical Data	Sunny Central 2500-EV	Sunny Central 2750-EV	Sunny Central 3000-EV		
nput (DC)					
MPP voltage range V_{DC} (at 25°C / at 35°C / at 50°C)	850 V to 1425 V / 1200 V / 1200 V	875 V to 1425 V / 1200 V / 1200 V	956 V to 1425 V / 1200 V 1200 V		
Min. input voltage V _{DC. min} / Start voltage V _{DC. Start}	778 V / 928 V	849 V / 999 V	927 V / 1077 V		
Max. input voltage V _{DC, max}	1500 V	1500 V	1500 V		
Max. input current I _{DC, max} (at 35°C / at 50°C)	3200 A / 2956 A	3200 A / 2956 A	3200 A / 2970 A		
Max. short-circuit current rating	6400 A	6400 A	6400 A		
Number of DC inputs	24 doub	le pole fused (32 single pole fuse	ed) for PV		
Number of DC inputs with optional DC battery coupling	18 double pole fused (36 si	ingle pole fused) for PV and 6 do	puble pole fused for batteries		
Max. number of DC cables per DC input (for each polarity)		2 x 800 kcmil, 2 x 400 mm ²			
ntegrated zone monitoring		0			
Available DC fuse sizes (per input)	200 A, 25	50 A, 315 A, 350 A, 400 A, 450	O A, 500 A		
Output (AC)					
Nominal AC power at cos φ =1 (at 35°C / at 50°C)	2500 kVA / 2250 kVA	2750 kVA / 2500 kVA	3000 kVA / 2700 kVA		
Nominal AC power at cos φ =0.8 (at 35°C / at 50°C)	2000 kW / 1800 kW	2200 kW / 2000 kW	2400 kW / 2160 kW		
Nominal AC current I _{AC.nom} = Max. output current I _{AC.max}	2624 A	2646 A	2646 A		
Max. total harmonic distortion	< 3% at nominal power	< 3% at nominal power	< 3% at nominal power		
Nominal AC voltage / nominal AC voltage range1181	550 V / 440 V to 660 V	600 V / 480 V to 690 V	655 V / 524 V to 721 V ⁹		
AC power frequency		50 Hz / 47 Hz to 53 Hz			
Min. short-circuit ratio at the AC terminals ¹⁰⁾		60 Hz / 57 Hz to 63 Hz > 2			
	• 1	/ 0.8 overexcited to 0.8 underex	rcitad		
Power factor at rated power / displacement power factor adjustable ^{8] 11]}		/ 0.0 overexcited to 0.0 underex			
Efficiency					
Max. efficiency ² / European efficiency ² / CEC efficiency ³	98.6% / 98.3% / 98.0%	98.7% / 98.5% / 98.5%	98.8% / 98.6% / 98.5%		
Protective Devices					
nput-side disconnection point		DC load-break switch			
Output-side disconnection point		AC circuit breaker			
DC overvoltage protection		Surge arrester, type I & II			
AC overvoltage protection (optional)	Surge arrester, class I & II				
ightning protection (according to IEC 62305-1)	Lightning Protection Level III				
Ground-fault monitoring / remote ground-fault monitoring	0/0				
nsulation monitoring	0				
Degree of protection: electronics / air duct / connection area		IP65 / IP34 / IP34			
as per IEC 60529) General Data		, ,			
Dimensions (W / H / D)	2780 / 22	118 / 1588 mm /100 4 / 01 3	/ 62 5 inch)		
Weight	2780 / 2318 / 1588 mm (109.4 / 91.3 / 62.5 inch)				
Self-consumption (max. ⁴⁾ / partial load ⁵⁾ / average ⁶⁾)	< 3400 kg / < 7496 lb < 8100 W / < 1800 W / < 2000 W				
Self-consumption (standby)	``	< 370 W	**		
nternal auxiliary power supply		Integrated 8.4 kVA transformer			
Operating temperature range ⁸⁾		-25 to 60°C / -13 to 140°F			
Noise emission ⁷⁾		67.8 dB(A)			
Femperature range (standby)		-40 to 60°C / -40 to 140°F			
Femperature range (storage)		-40 to 70°C / -40 to 158°F			
Max. permissible value for relative humidity (condensing / non-condensing)	Q5% to	o 100% (2 month / year) / 0 %	to 95%		
Maximum operating altitude above MSL® 1000 m / 2000 m ¹²⁾ / 3000 m ¹²⁾	• / O / -	● / ○ / –	•/0/-		
Fresh air consumption	•/ =/-	6500 m³/h	•/ •/		
Features		0300 III / II			
OC connection	Terr	minal lug on each input (without f	ise)		
AC connection		• • • •			
Communication	With busbar system (three busbars, one per line conductor)				
Communication with SMA string monitor (transmission medium)	Ethernet, Modbus Master, Modbus Slave				
Enclosure / roof color	Modbus TCP / Ethernet (FO MM, Cat-5)				
Supply transformer for external loads	RAL 9016 / RAL 7004 ○ (2.5 kVA)				
Standards and directives complied with	CE, IEC / EN 62109-1 IEC	` <i>'</i>	E1547. Arrêté du 23/04/08		
EMC standards	CE, IEC / EN 62109-1, IEC / EN 62109-2, BDEW-MSRL, IEEE1547, Arrêté du 23/04/0 CISPR 11, CISPR 22, EN55011:2017, EN 55022, IEC/EN 61000-6-4, IEC/EN 61000-6-2, IEC 62920, FCC Part 15 Class A				
	61000-6-2, IEC 62920, FCC Part 15 Class A				
Quality standards and directives complied with	FCC Part 15 Class A	VDE 2862 page 2, DIN EN ISO	9001		
Quality standards and directives complied with Standard features Optional — not available	FCC Part 15 Class A	/DE 2862 page 2, DIN EN ISO	9001		

- 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 $35\,^{\circ}\text{C}$
- 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.

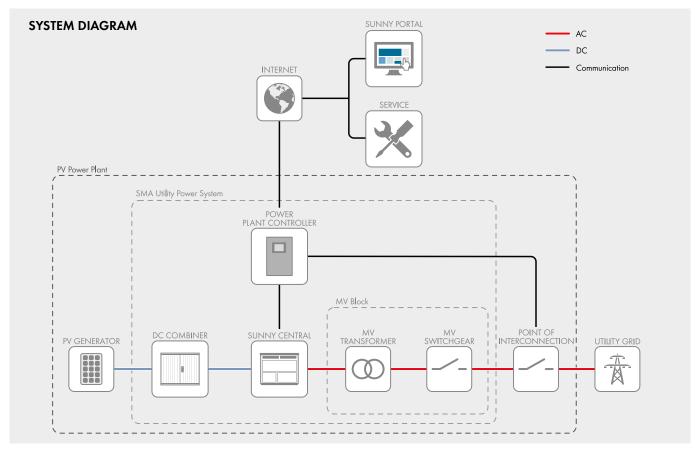
 SMA can be found in the corresponding data sheets.

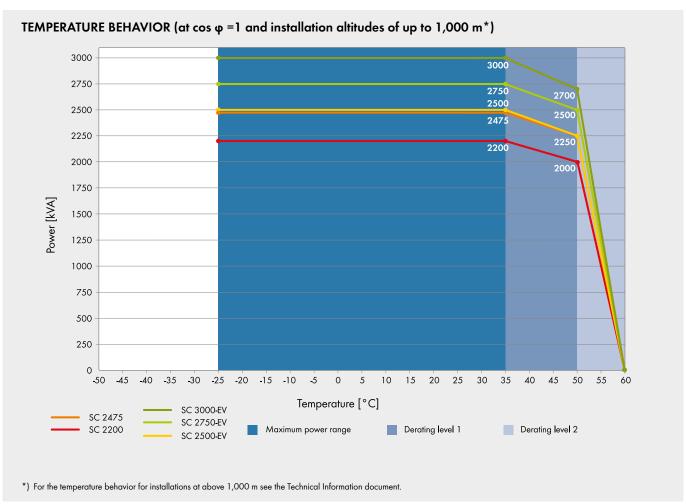
 SMA cvoltage range can be extended to 753V for 50Hz grids only (option "Aux power supply: external" must be selected, option "housekeeping" not combinable).

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

 Depending on the DC voltage

 Available as a special version, earlier temperature-dependent de-rating and reduction of DC open-circuit voltage





FLUENCE ADVANCION® ENERGY STORAGE

Unmatched dependability. Designed to evolve.

The Fluence Advancion platform is built on more than 10 years of experience and has a unique parallel system architecture that delivers unmatched dependability and solves the technology evolution problem. Advancion's industrial-strength design is built for the most demanding applications including Capacity Peak Power, Frequency Regulation, Renewable Integration, and T&D Enhancement.

The Advancion architecture is component-agnostic which enables seamless integration of the best available technologies now and into the future. Advancion's comprehensive patented control algorithms enable optimal operational performance and ensure reliable and safe operation over the lifetime of the asset.



 Advancion delivers industry-leading reliability and uptime, with safety designed into every layer.



 10 years of experience in developing, owning, and operating energy storage systems in markets worldwide is embedded in the Advancion architecture.



- Advancion's unique open architecture incorporates the best available technology now and in the future.
- Advancion systems can be efficiently and cost-effectively augmented as needed with additional capacity over the life of the asset.



DESIGNED FOR THE LONG HAUL

Advancion is a complete, fully-architected and integrated solution designed with the long-term owner operator in mind, with industry-leading reliability, uptime, and years of safe operation.

99% FLEET UPTIME*

* Advancion fleet performance in 2017. Technical Availability (At): Availability considering forced outages or derates caused by Advancion equipment, or environmental control equipment. Excludes planned downtime for all maintenance and planned and forced downtime caused by BOP components. EAF will vary based on contractual obligations.



Advancion® Energy Storage Specifications

SYSTEM SPECIFICATIONS

Rated AC Power (50°C)	2 MW-100+ MW	Design Lifetime	Up to 25 years with battery augmentation, usage dependent	
Grid Voltage	11kV, 13.8kV, 20kV, 34.5kV (other options available)	Operation Modes	Automatic Resource Control (ARC), Autonomous Dispatch, Manual Dispatch	
Grid Frequency	50Hz / 60Hz		Real and Reactive Power Dispatch, Primary	
Reactive Power Four-quadrant control, 0.9 leading to 0.9 lagging at rated power (reactive capability available over full real power range)*		Operational Capabilities	Frequency Control (Droop Response), Secondary Frequency Control (Automatic Generation Control), Contingency Response, Spinning Reserves, Automatic Voltage Regulation (Voltage Droop, Constant Power Factor, Dispatchable	
Auxiliary Power Usage	<10 kW/MW typical (application dependent)		VARs), Renewable Ramp Control, Transmission & Distribution Deferral	
Availability	>97.0%	System Response Time	Max capacity change in <1 second	
Operating Temperature			Controls include HMI, SCADA, Data Historian, Application Agents, and Patented Performance	
Altitude	De-rated over 2,000 meters	Monitoring	Algorithms	
Seismic Rating	Tested to Zone 4	External Control Interface	SCADA and EMS integration available via common protocols including DNP3	
	*Additional reactive capability upon request	Standards Compliance	NEC, UL1741, Rule 21, other common grid codes, IEEE519, UL1973, UL1642, UL9540	

BATTERY SPECIFICATIONS

Battery Duration	30 minutes – 8 hours
Round Trip Efficiency (AC to AC Including Isolation Transformer)	Varies by configuration
Enclosure Dimensions	Containers (standard ISO or customized to project requirement) or building (customized to project requirement)
Cooling	Air-to-air DX or similar
Fire Suppression	Included, aqueous or non-aqueous based on system configuration
Battery Monitoring	Including state of charge, state of health, max/min cell voltage, max/min cell temperature, power limits, current limits, component failures, ground fault
Battery Chemistry	Advanced lithium ion sealed cells or similar

About Fluence[™]



Fluence, a Siemens and AES company, is the leading global energy storage technology solutions and services company that combines the agility of a technology company with the expertise, vision, and financial backing of two industry powerhouses. Building on the pioneering work of AES Energy Storage and Siemens energy storage, Fluence's goal is to create a more sustainable future by transforming the way we power our world Fluence offers proven energy storage technology solutions designed to address the diverse needs and challenges of customers in a rapidly transforming energy landscape, providing design, delivery, and integration in over 160 countries.

