Prepared by: Tino Tedeschi
07909756884
tino@c3es.co.uk

For: Reinhardt
George V Avenue, Worthing

Quote #: 4846197
Valid until: 8th August 2024



Solar Energy System Proposal

Dear Reinhardt,

Thank you for the opportunity to present your Solar Energy System Proposal.

Best Regards,
Tino Tedeschi
C3 Energy Solutions Limited

Recommended System Option

6.885 kW	£1,003	£10,328	£10,328
System Size	Estimated Annual Electricity Bill Savings	Total System Price	Net System Price



Your Solution

Solar Panels Black with silver frame

JA Solar
6.885kW Total Solar Power
17 x 405 (JAM54S30-405/MR)
6,194

S6 String inverter - 1PH DC (2.5-6k)

8kW of Inverter Power
SOLIS - Ningbo Ginlong Technologies
2 x S6-GR1P4K
5 -year Standard Warranty

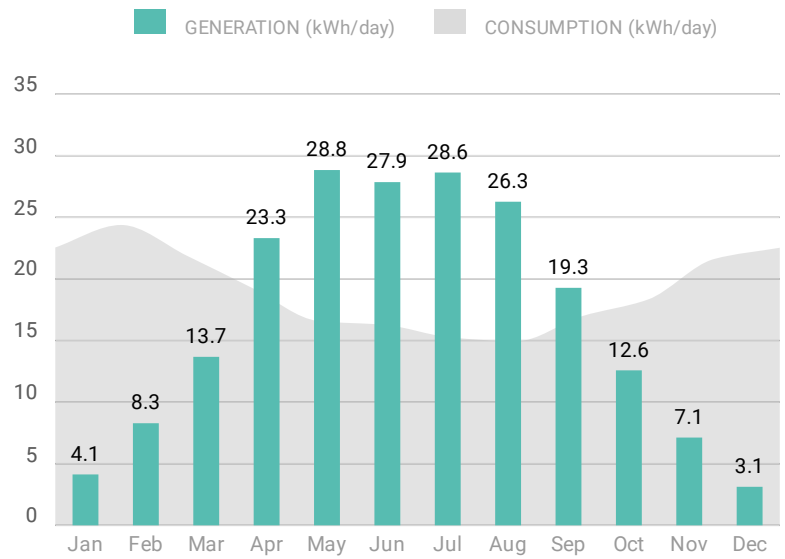


Warranties: 12 Year Panel Product Warranty, 25 Year Panel Performance Warranty, 5 Year Inverter Product Warranty

System Performance

88%

Energy From Solar



System Performance Assumptions: System Total losses: 15.6%, Inverter losses: 2.9%, Optimizer losses: 0%, Shading losses: 2.0%, Performance Adjustment: 0%, Output Calculator: System Advisor Model 2020.02.29.r2. Panel Orientations: 17 panels with Azimuth 174 and Slope 20.

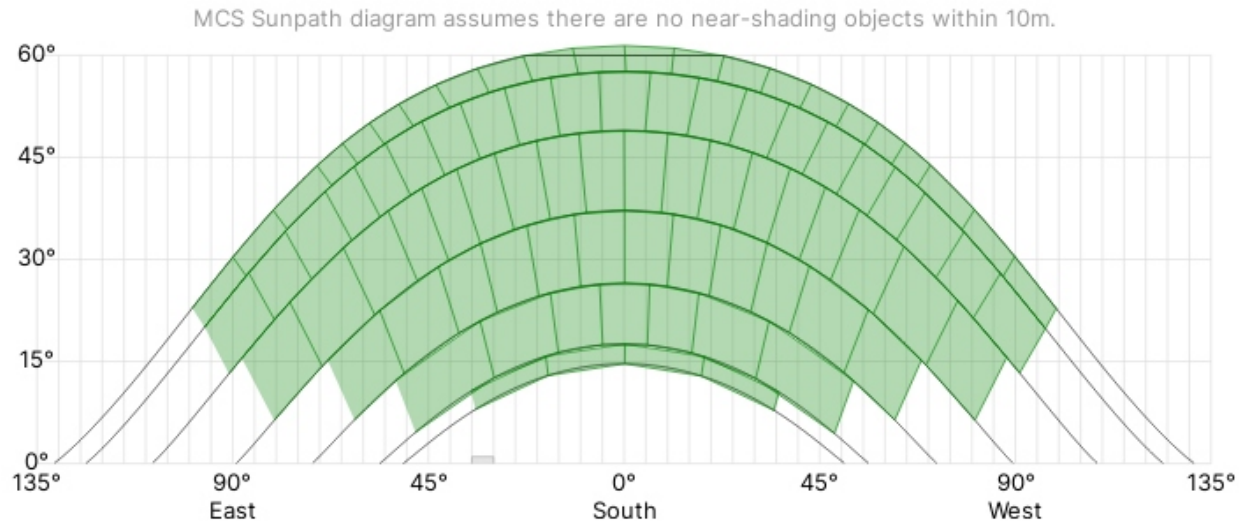
The MCS output (MIS 3002) and self-consumption (MGD 003) calculation methodology was not used in calculating the numbers in the table below. An alternative calculator System Advisor Model 2020.02.29.r2 was used.

A. Installation data		
Installed capacity of PV system - kWp (stc)	6.885	kWp
Orientation of the PV system - degrees from South	Group 1: 17 panels with Orientation: 5 °	°
Inclination of system - degrees from horizontal	Group 1: 17 panels with Tilt: 20°	°
Postcode region	2	
B. Performance calculations		
kWh/kWp (Kk)	917.8	kWh/kWp
Shade Factor (SF)	0.980	
Estimated annual output (kWp x Kk x SF)	6,194	kWh
C. Estimated PV self-consumption - PV Only		

Assumed occupancy archetype	In Half Day	
Assumed annual electricity consumption, kWh	7,000.00	kWh
Assumed annual electricity generation from solar PV system, kWh	6,194	kWh
Expected solar PV self-consumption (PV Only)	2,276.80	kWh
Grid electricity independence / Self-sufficiency (PV Only)	32.53	%

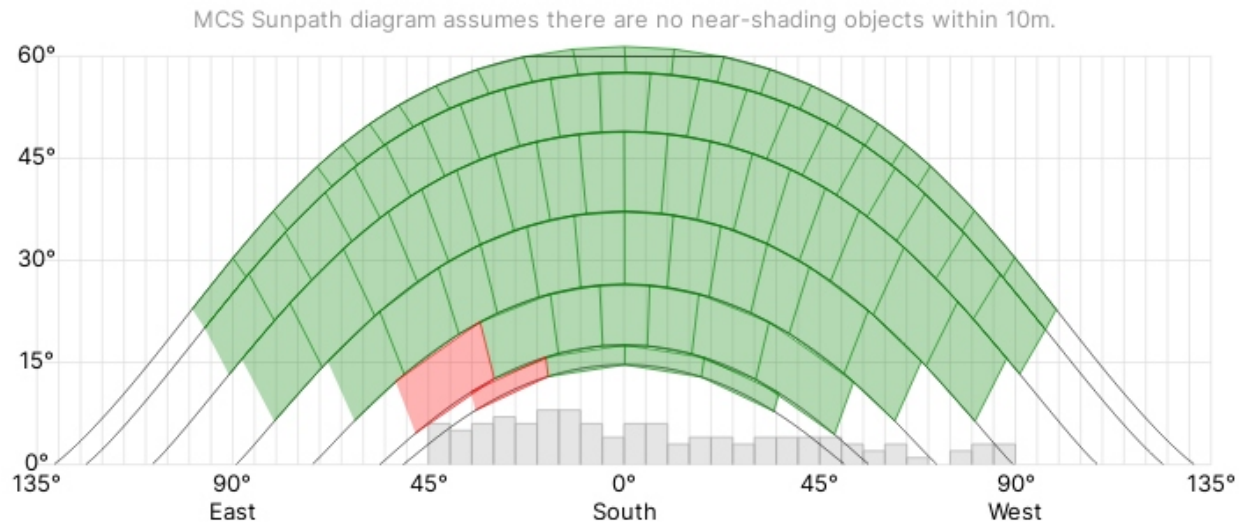
Sunpath Diagram

Disclaimer: The shade mask mapped onto the sunpath diagram is based off the field of view from a point in the center of the array. This means that the shade mask shown will only capture the shading experienced at the array center point, and will not reflect the shading casted onto other locations on the array.



Sunpath Diagram

Disclaimer: The shade mask mapped onto the sunpath diagram is based off the field of view from a point in the center of the array. This means that the shade mask shown will only capture the shading experienced at the array center point, and will not reflect the shading casted onto other locations on the array.



Environmental Benefits

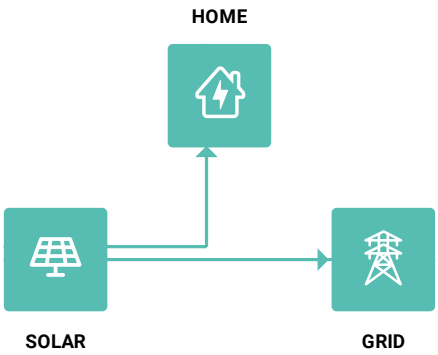
Solar has no emissions. It just silently generates pure, clean energy.



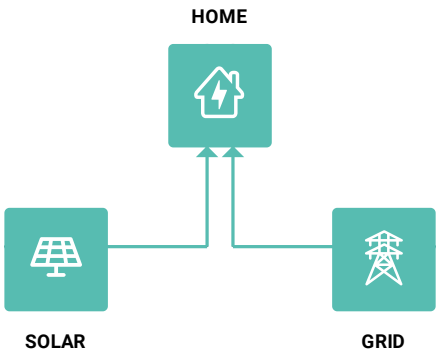
Each Year		Over System Lifetime		
88%	2 tons	46,231	297	33
Of CO_2, SO_x & NO_x	Avoided CO_2 per year	Car km avoided	Trees planted	Long haul flights avoided

How your system works

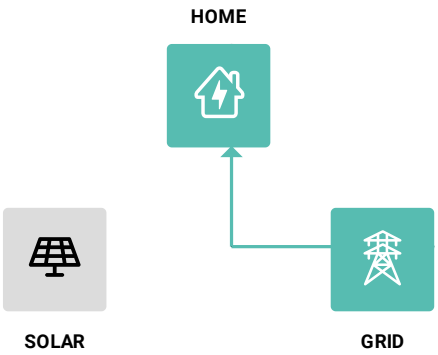
Generating Excess Solar



Partially Offset Usage

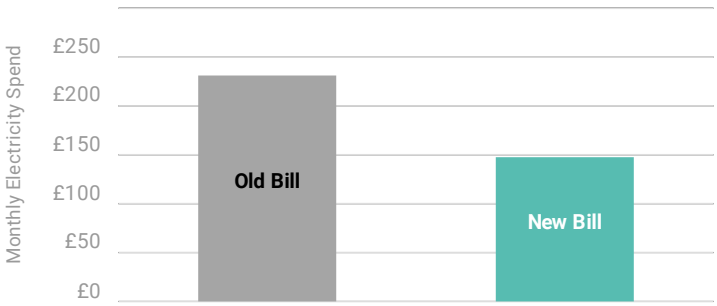


Night

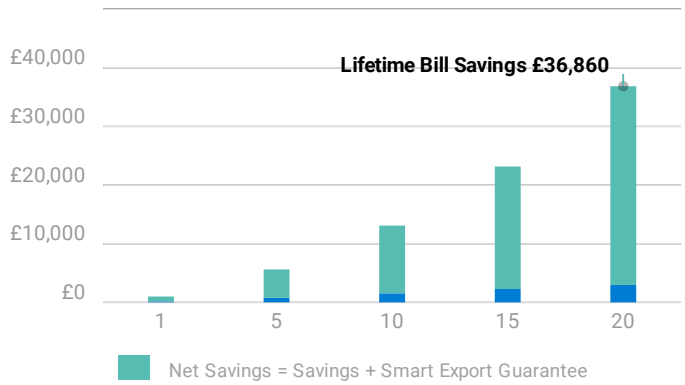


Electricity Bill Savings

First Year Monthly Bill Savings



Cumulative Bill Savings



Month	Solar Generation (kWh)	Electricity Consumption before solar (kWh)	Electricity Imported after solar (kWh)	Electricity Exported after solar (kWh)	Export Credit (£)	Utility Bill before solar (£)	Utility Bill after solar (£)	Estimated Savings (£)
Jan	128	699	589	18	1	274	233	41
Feb	232	683	536	86	4	268	210	58
Mar	424	678	463	208	9	266	178	88
Apr	699	577	334	456	19	229	120	109
May	894	514	258	639	26	205	85	121
Jun	836	488	234	581	24	196	78	118
Jul	888	473	226	641	26	190	73	118
Aug	814	463	246	597	24	187	82	105
Sep	578	509	311	379	16	204	115	89
Oct	390	568	407	229	9	226	156	69
Nov	214	648	511	77	3	255	201	54
Dec	97	698	608	6	0	274	240	34

Your projected energy cost is calculated by considering a 7% increase in energy cost each year, due to trends in the raising cost of energy. This estimate is based on your selected preferences, current energy costs and the position and orientation of your roof to calculate the efficiency of the system. Projections are based on estimated usage of 7000 kWh per year, assuming Standard Variable Electricity Tariff.

Your electricity tariff rates may change as a result of installing the system. You should contact your electricity retailer for further information.

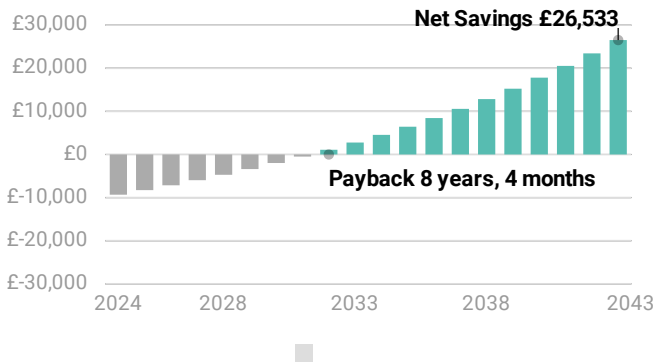
Proposed Tariff Details - British Gas Standard Variable	
Energy Charges	
Usage Charge *All Day*	£0.37 / kWh
Smart Export Guarantee	
Feed-In Credit *All Day*	£0.04 / kWh

Fixed Charges	
Fixed Charge	£15.31 / month

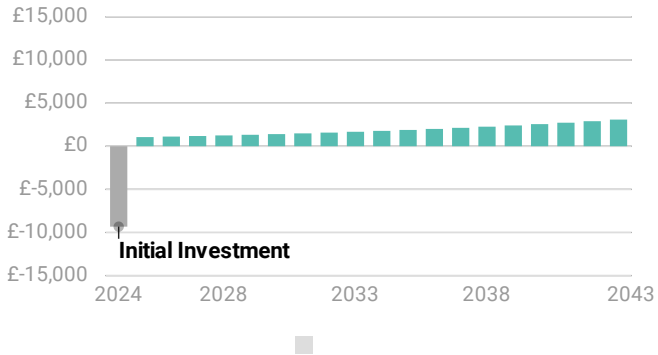
Net Financial Impact Cash

£36,860	-	£10,328	=	£26,533
Utility Bill Savings		Net System Cost		Estimated Net Savings

Cumulative Savings From Going Solar



Annual Savings From Going Solar



Estimates do not include replacement costs of equipment not covered by a warranty. Components may need replacement after their warranty period. Financial discount rate assumed: 6.75%

Quotation

Payment Option: Cash

17 x JA Solar 405 Watt Panels (JAM54S30-405/MR) 2 x S6-GR1P4K (SOLIS - Ningbo Ginlong Technologies) Tilt Racks (17 panels)	
Total System Price	£10,327.50 Excluding £0.00 VAT
Purchase Price	**£10,327.50** Including £0.00 VAT

Price excludes Retailer Smart Meter should you want us to install your Smart Meter it will be an additional cost.
This proposal is valid until 8th August 2024.

Quote Acceptance

I have read & accept the terms and conditions.

Signature _____

Name _____ Date _____

OpenSolar

This proposal has been prepared by C3 Energy Solutions Limited using tools from OpenSolar. Please visit www.opensolar.com/proposal-disclaimer for additional disclosures from OpenSolar.

Harvest the Sunshine

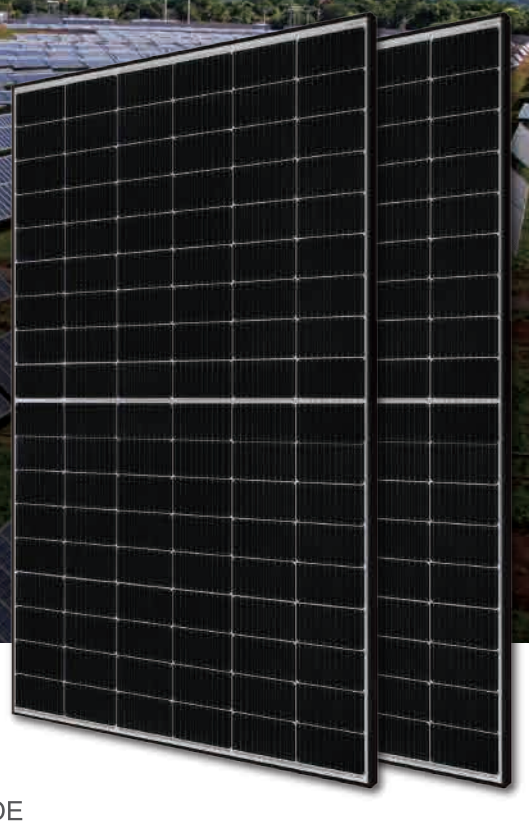
DEEP BLUE 3.0

Mono

415W MBB Half-cell Module
JAM54S30 390-415/MR Series

Introduction

Assembled with 11BB PERC cells, the half-cell configuration of the modules offers the advantages of higher power output, better temperature-dependent performance, reduced shading effect on the energy generation, lower risk of hot spot, as well as enhanced tolerance for mechanical loading.

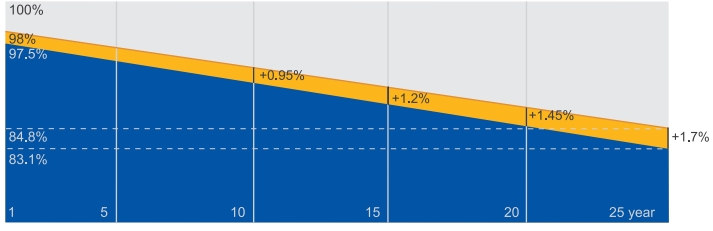


- Higher output power
- Lower LCOE
- Less shading and lower resistive loss
- Better mechanical loading tolerance

Superior Warranty

- 12-year product warranty
- 25-year linear power output warranty

0.55% Annual Degradation Over 25 years



New linear power warranty Standard module linear power warranty

Comprehensive Certificates

- IEC 61215, IEC 61730,UL 61215, UL 61730
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- ISO 45001: 2018 Occupational health and safety management systems
- IEC TS 62941: 2016 Terrestrial photovoltaic (PV) modules – Guidelines for increased confidence in PV module design qualification and type approval

JA SOLAR

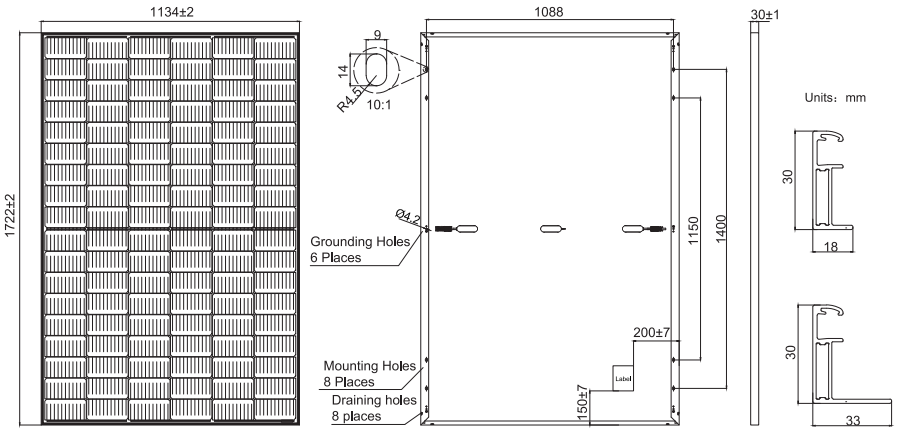
www.jasolar.com

Specifications subject to technical changes and tests.
JA Solar reserves the right of final interpretation.

JA SOLAR

JAM54S30 390-415/MR Series

MECHANICAL DIAGRAMS



Remark: customized frame color and cable length available upon request

SPECIFICATIONS

Cell	Mono
Weight	21.5kg±3%
Dimensions	1722±2mm×1134±2mm×30±1mm
Cable Cross Section Size	4mm²（IEC），12 AWG(UL)
No. of cells	108(6x18)
Junction Box	IP68, 3 diodes
Connector	MC4(1000V) MC4-EVO2(1500V)
Cable Length (Including Connector)	Portrait: 300mm(+)/400mm(-); Landscape: 1200mm(+)/1200mm(-)
Packaging Configuration	36pcs/Pallet, 936pcs/40ft Container

ELECTRICAL PARAMETERS AT STC

TYPE	JAM54S30 -390/MR	JAM54S30 -395/MR	JAM54S30 -400/MR	JAM54S30 -405/MR	JAM54S30 -410/MR	JAM54S30 -415/MR
Rated Maximum Power(Pmax) [W]	390	395	400	405	410	415
Open Circuit Voltage(Voc) [V]	36.85	36.98	37.07	37.23	37.32	37.45
Maximum Power Voltage(Vmp) [V]	30.64	30.84	31.01	31.21	31.45	31.61
Short Circuit Current(Isc) [A]	13.61	13.70	13.79	13.87	13.95	14.02
Maximum Power Current(Imp) [A]	12.73	12.81	12.90	12.98	13.04	13.13
Module Efficiency [%]	20.0	20.2	20.5	20.7	21.0	21.3
Power Tolerance	0~+5W					
Temperature Coefficient of Isc(α_Isc)	+0.045%°C					
Temperature Coefficient of Voc(β_Voc)	-0.275%/°C					
Temperature Coefficient of Pmax(γ_Pmp)	-0.350%/°C					
STC	Irradiance 1000W/m², cell temperature 25°C, AM1.5G					

Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer.They only serve for comparison among different module types.

ELECTRICAL PARAMETERS AT NOCT

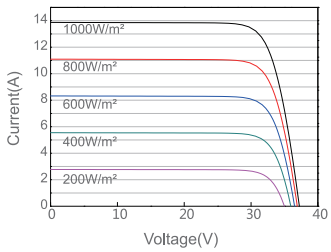
TYPE	JAM54S30 -390/MR	JAM54S30 -395/MR	JAM54S30 -400/MR	JAM54S30 -405/MR	JAM54S30 -410/MR	JAM54S30 -415/MR
Rated Max Power(Pmax) [W]	294	298	302	306	310	314
Open Circuit Voltage(Voc) [V]	34.62	34.75	34.88	35.12	35.23	35.37
Max Power Voltage(Vmp) [V]	28.87	29.08	29.26	29.47	29.72	29.89
Short Circuit Current(Isc) [A]	10.89	10.96	11.03	11.10	11.16	11.22
Max Power Current(Imp) [A]	10.18	10.25	10.32	10.38	10.43	10.50
NOCT	Irradiance 800W/m², ambient temperature 20°C,wind speed 1m/s, AM1.5G					

OPERATING CONDITIONS

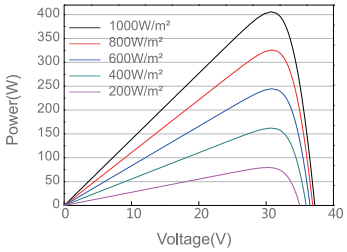
Maximum System Voltage	1000V/1500V DC
Operating Temperature	-40℃~+85℃
Maximum Series Fuse Rating	25A
Maximum Static Load,Front* Maximum Static Load,Back*	5400Pa(112lb/ft²) 2400Pa(50lb/ft²)
NOCT	45±2℃
Safety Class	Class Ⅱ
Fire Performance	UL Type 1

CHARACTERISTICS

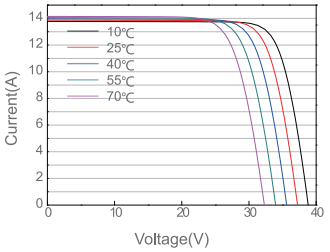
Current-Voltage Curve JAM54S30-405/MR



Power-Voltage Curve JAM54S30-405/MR



Current-Voltage Curve JAM54S30-405/MR



S6-GR1P(2.5-6)K

Solis Single Phase Inverters



360 degree

Features:

- Max. efficiency 97.7%
- String current up to **14A**
- Super high frequency switching technology
- Wide voltage range and low startup voltage
- 2 MPPT design with precise MPPT algorithm
- Intergrated Export Power Manager (EPM)
- Integrated AFCI (DC arc-fault circuit protection)
- Compact and lightweight
- Friendly and adaptable connection to the grid



Model:

S6-GR1P2.5K S6-GR1P3K S6-GR1P3.6K
S6-GR1P4K S6-GR1P4.6K S6-GR1P5K
S6-GR1P6K

Datasheet

Model Name	S6-GR1P2.5K	S6-GR1P3K	S6-GR1P3.6K	S6-GR1P4K	S6-GR1P4.6K	S6-GR1P5K	S6-GR1P6K
Input DC							
Recommended max. PV power	3.75 kW	4.5 kW	5.4 kW	6 kW	6.9 kW	7.5 kW	9 kW
Max. input voltage	550 V	600 V					
Rated voltage	250 V	330 V					
Start-up voltage	60 V	120 V					
MPPT voltage range	50-450 V	90-520 V					
Max. input current	14 A / 14 A						
Max. short circuit current	22 A / 22 A						
MPPT number/Max. input strings number	2/2						
Output AC							
Rated output power	2.5 kW	3 kW	3.6 kW	4 kW	4.6 kW	5 kW	6 kW
Max. apparent output power	2.8 kVA	3.3 kVA	4 kVA	4.4 kVA	5 kVA	5 kVA	6 kVA
Max. output power	2.8 kW	3.3 kW	4 kW	4.4 kW	5 kW	5 kW	6 kW
Rated grid voltage	1/N/PE, 220 V / 230 V						
Rated grid frequency	50 Hz / 60 Hz						
Rated grid output current	11.4 A / 10.9 A	13.6 A / 13.0 A	16.0 A / 15.7 A	18.2 A / 17.4 A	20.9 A / 20.0 A	22.7 A / 21.7 A	27.3 A
Max. output current	13.3 A	15.7 A	16.0 A	21.0 A	23.8 A	25.0 A	27.3 A
Power Factor	>0.99 (0.8 leading - 0.8 lagging)						
THDi	<3%						
Efficiency							
Max. efficiency	97.3%	97.3%		97.6%		97.7%	
EU efficiency	96.5%	96.6%		97.1%		97.1%	
Protection							
DC reverse-polarity protection	Yes						
Short circuit protection	Yes						
Output over current protection	Yes						
Surge protection	Yes						
Grid monitoring	Yes						
Anti-islanding protection	Yes						
Temperature protection	Yes						
Integrated AFCI (DC arc-fault circuit protection)	Yes (1)						
Integrated DC switch	Optional						
General Data							
Dimensions (W*H*D)	310*543*160 mm						
Weight	11 kg	11.2 kg		12 kg			
Topology	Transformerless						
Self consumption (night)	<1 W						
Operating ambient temperature range	-25 ~ +60°C						
Relative humidity	0-100%						
Ingress protection	IP66						
Cooling concept	Natural convection						
Max. operation altitude	4000 m						
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC 60068, IEC 61683, EN 50530, MEA, PEA						
Safety/EMC standard	IEC/EN 62109-1/-2, IEC/EN 61000-6-2/-3						
Features							
DC connection	MC4 connector						
AC connection	Quick connection plug						
Display	LCD						
Communication	RS485, Optional: Wi-Fi, GPRS						

(1) Activation required.