01	Progetto Definitivo	13/07/2023	PRR

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DISEGNATO:	CONTROLLATO:	APPROVATO:
PRR	VCC	VCC

SCALA:	DATA:	FOGLIO:	FORMATO
	13/07/2023	001/010	A4

01

PROGETTO:

COMUNE DI NARO (AG)

Progetto definitivo di un impianto per la produzione di energia elettrica da fonte solare con potenza installata di 39,72 MW ed immessa in rete di 38 MW, da realizzarsi nel Comune di Naro (AG), località Serra La Guardia snc

TITOLO:

SCHEDE TECNICHE

Documento N.

DEV-PLN-025-01-IT-S-GNG01-IT

Harvest the Sunshine

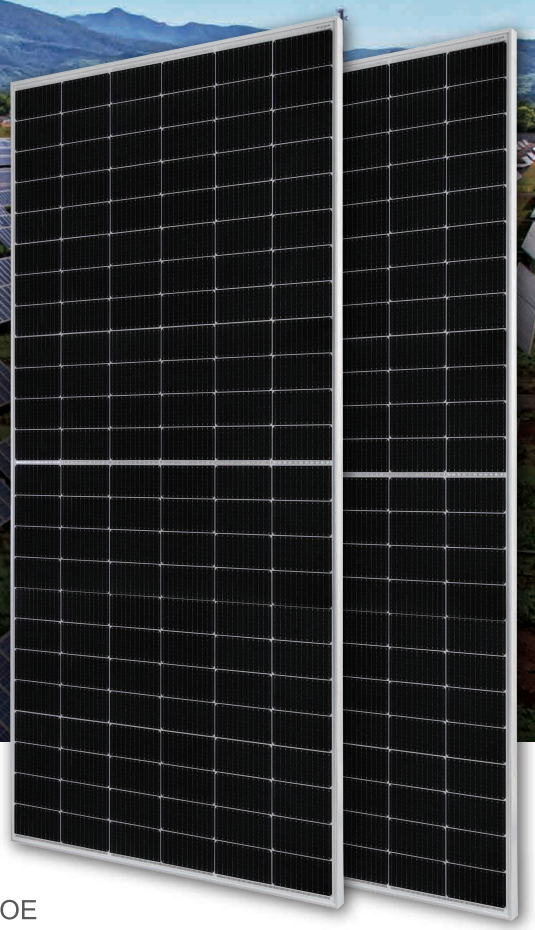
DEEP BLUE 3.0

Mono

555W MBB Half-cell Module
JAM72S30 530-555/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.

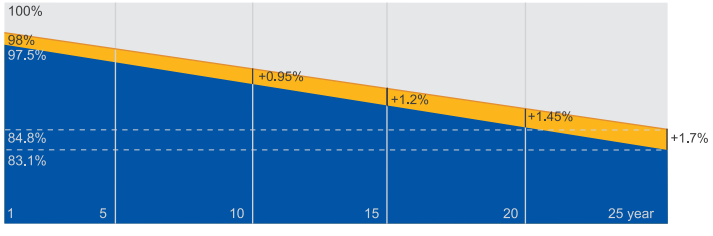


- Higher output power
- Lower LCOE
- Less shading and lower resistive loss
- Better mechanical loading tolerance

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 62941: 2019 Terrestrial photovoltaic (PV) modules - Quality system for PV module manufacturing

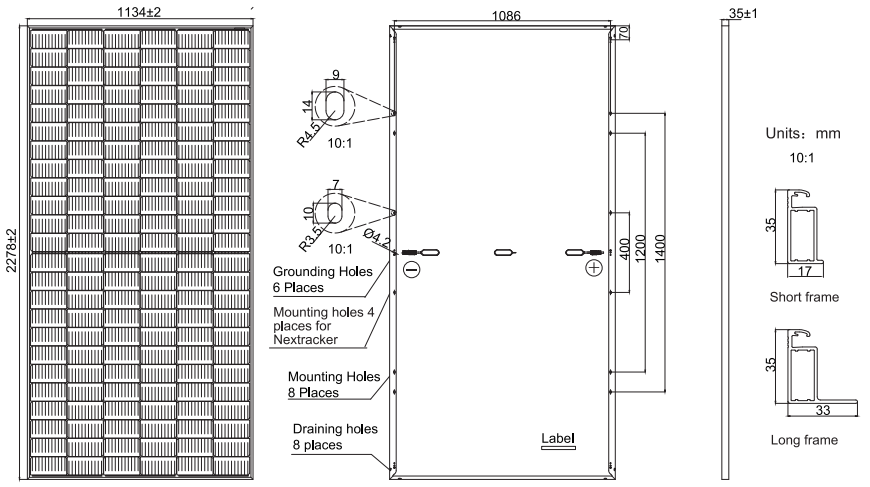
JA SOLAR

www.jasolar.com

JA SOLAR

JAM72S30 530-555/MR Series

MECHANICAL DIAGRAMS



Remark: customized frame color and cable length available upon request

SPECIFICATIONS

Cell	Mono
Weight	28.1kg
Dimensions	2278±2mm×1134±2mm×35±1mm
Cable Cross Section Size	4mm²（IEC），12 AWG(UL)
No. of cells	144(6×24)
Junction Box	IP68, 3 diodes
Connector	MC4-EVO2/ QC 4.10-35
Cable Length (Including Connector)	Portrait: 300mm(+)/400mm(-); Landscape: 1300mm(+)/1300mm(-)
Packaging Configuration	31pcs/Pallet 620pcs/40HQ Container

ELECTRICAL PARAMETERS AT STC

TYPE	JAM72S30 -530/MR	JAM72S30 -535/MR	JAM72S30 -540/MR	JAM72S30 -545/MR	JAM72S30 -550/MR	JAM72S30 -555/MR
Rated Maximum Power(Pmax) [W]	530	535	540	545	550	555
Open Circuit Voltage(Voc) [V]	49.30	49.45	49.60	49.75	49.90	50.02
Maximum Power Voltage(Vmp) [V]	41.31	41.47	41.64	41.80	41.96	42.11
Short Circuit Current(Isc) [A]	13.72	13.79	13.86	13.93	14.00	14.07
Maximum Power Current(Imp) [A]	12.83	12.90	12.97	13.04	13.11	13.18
Module Efficiency [%]	20.5	20.7	20.9	21.1	21.3	21.5
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	JAM72S30 -530/MR	JAM72S30 -535/MR	JAM72S30 -540/MR	JAM72S30 -545/MR	JAM72S30 -550/MR	JAM72S30 -555/MR
Rated Max Power(Pmax) [W]	401	405	408	412	416	420
Open Circuit Voltage(Voc) [V]	46.18	46.31	46.43	46.55	46.68	46.85
Max Power Voltage(Vmp) [V]	38.57	38.78	38.99	39.20	39.43	39.66
Short Circuit Current(Isc) [A]	11.01	11.05	11.09	11.13	11.17	11.21
Max Power Current(Imp) [A]	10.39	10.43	10.47	10.51	10.55	10.59
NOCT	Irradiance 800W/m², ambient temperature 20°C,wind speed 1m/s, AM1.5G					

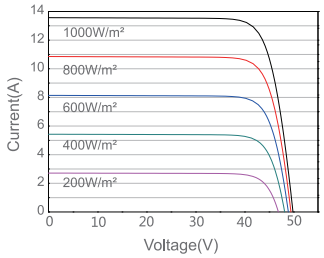
*For NexTracker installations, Maximum Static Load, Front is 1800Pa while Maximum Static Load, Back is 1800Pa.

OPERATING CONDITIONS

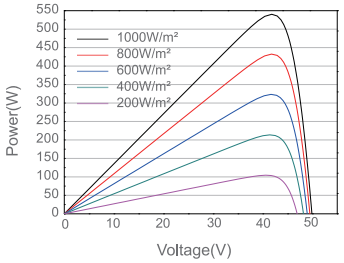
Maximum System Voltage	1000V/1500V DC
Operating Temperature	-40℃~+85℃
Maximum Series Fuse Rating	25A
Maximum Static Load,Front* Maximum Static Load,Back*	5400Pa(112lb/ft²) 2400Pa(50lb/ft²)
NOCT	45±2℃
Safety Class	Class Ⅱ
Fire Performance	UL Type 1

CHARACTERISTICS

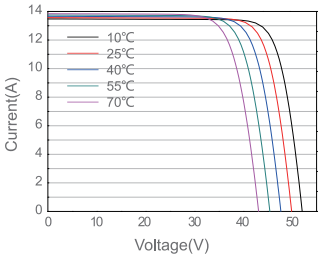
Current-Voltage Curve JAM72S30-540/MR



Power-Voltage Curve JAM72S30-540/MR



Current-Voltage Curve JAM72S30-540/MR



MV POWER STATION
4000-S2 / 4200-S2 / 4400-S2 / 4600-S2

MVPS-4000-S2 / MVPS-4200-S2 / MVPS-4400-S2 / MVPS-4600-S2

Robust
- Station and all individual components type-tested
- Optimally suited to extreme ambient conditions

Easy to Use
- Plug and play concept
- Completely pre-assembled for easy set-up and commissioning

Cost-Effective
- Easy planning and installation
- Low transport costs due to 20-foot skid

Flexible
- One design for the whole world
- DC-Coupling Ready
- Numerous options

MV POWER STATION 4000-S2 / 4200-S2 / 4400-S2 / 4600-S2

Turnkey Solution for PV Power Plants and large-scale storage systems

With the power of the new robust central inverters, the Sunny Central UP or Sunny Central Storage UP, and with perfectly adapted medium-voltage components, the new MV Power Station offers even more power density and is a turnkey solution available worldwide. Being the ideal choice for the new generation of PV power plants operating at 1500 VDC, the integrated system solution is easy to transport and quick to assemble and commission. The MVPS and all components are type-tested. The MV Power Station combines rigorous plant safety with maximum energy yield and minimized deployment and operating risk. The MV Power Station is prepared for DC coupling.

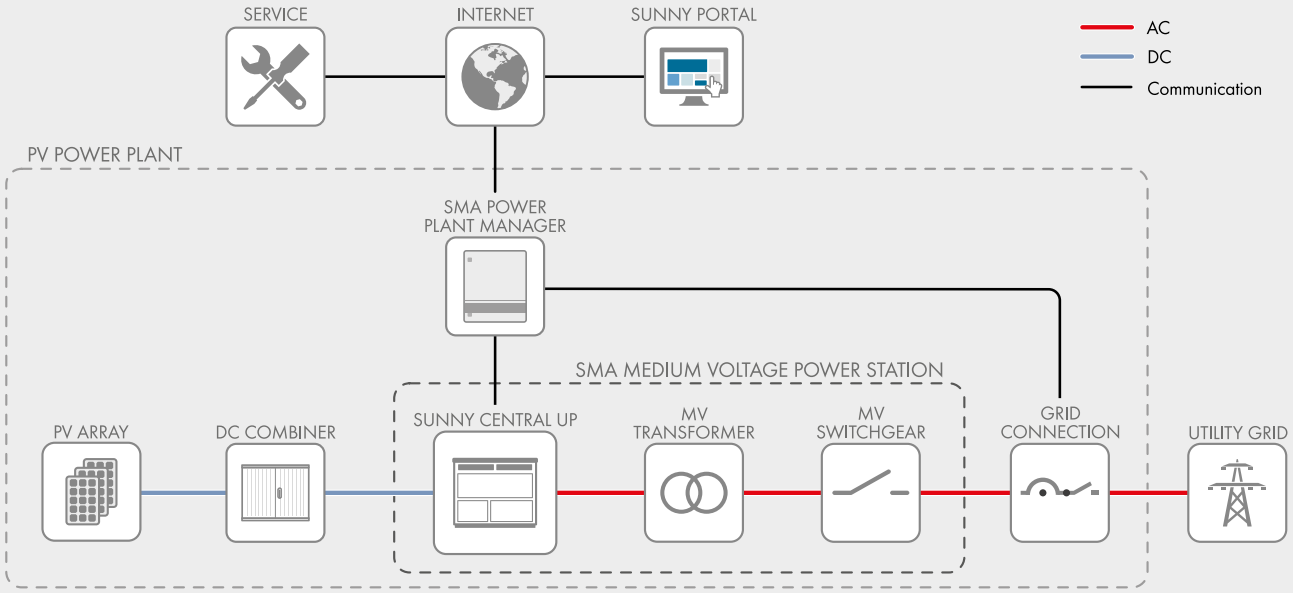
MV POWER STATION
4000-S2 / 4200-S2 / 4400-S2 / 4600-S2

Technical Data	MVPS 4000-S2	MVPS 4200-S2
Input (DC)		
Available inverters	1 x SC 4000 UP or 1 x SCS 3450 UP or 1 x SCS 3450 UP-XT	1 x SC 4200 UP or 1 x SCS 3600 UP or 1 x SCS 3600 UP-XT
Max. input voltage	1500 V	1500 V
Number of DC inputs	dependent on the selected inverters	
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) on the medium-voltage side		
Rated power at SC UP (at -25°C to + 35°C / 40°C optional 50°C)[1)]	4000 kVA / 3600 kVA	4200 kVA / 3780 kVA
Rated power at SCS UP (at -25°C bis +25°C / 40°C optional 50°C)[1)]	3450 kVA / 2930 kVA	3620 kVA / 3075 kVA
Charging power at SCS UP-XT (at -25°C bis +25°C / 40°C optional 50°C)[1)]	3590 kVA / 3000 kVA	3770 kVA / 3150 kVA
Discharging power at SCS UP-XT (at -25°C bis +25°C / 40°C optional 50°C)[1)]	4000 kVA / 3400 kVA	4200 kVA / 3570 kVA
Typical nominal AC voltages	10 kV to 35 kV	10 kV to 35 kV
AC power frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Transformer vector group Dy11 / YNd11 / YNy0	● / ○ / ○	● / ○ / ○
Transformer cooling methods	KNAN[2)]	KNAN[2)]
Transformer no-load losses Standard / Eco Design 1 / Eco Design 2	● / ○ / ○	● / ○ / ○
Transformer short-circuit losses Standard / Eco Design 1 / Eco Design 2	● / ○ / ○	● / ○ / ○
Max. total harmonic distortion	< 3%	
Reactive power feed-in (up to 60% of nominal power)	○	
Power factor at rated power / displacement power factor adjustable	1 / 0.8 overexcited to 0.8 underexcited	
Inverter efficiency		
Max. efficiency[3)] / European efficiency[3)] / CEC weighted efficiency[4)]	98.8% / 98.6% / 98.5%	98.8% / 98.7% / 98.5%
Protective devices		
Input-side disconnection point	DC load-break switch	
Output-side disconnection point	Medium-voltage vacuum circuit breaker	
DC overvoltage protection	Surge arrester type I	
Galvanic isolation	●	
Internal arc classification medium-voltage control room (according to IEC 62271-202)	IAC A 20 kA 1 s	
General Data		
Dimensions (W / H / D)	6058 mm / 2896 mm / 2438 mm	
Weight	< 18 t	
Self-consumption (max. / partial load / average)[1)]	< 8.1 kW / < 1.8 kW / < 2.0 kW	
Self-consumption (stand-by)[1)]	< 370 W	
Ambient temperature -25°C to +45°C / -25°C to +55°C / -40°C to +45°C	● / ○ / ○	
Degree of protection according to IEC 60529	Control rooms IP23D, inverter electronics IP54	
Environment: standard / harsh	● / ○	
Degree of protection according to IEC 60721-3-4 (4C1, 4S2 / 4C2, 4S4)	● / ○	
Maximum permissible value for relative humidity	95% (for 2 months/year)	
Max. operating altitude above mean sea level 1000 m / 2000 m	● / ○	
Fresh air consumption of inverter	6500 m³/h	
Features		
DC terminal	Terminal lug	
AC connection	Outer-cone angle plug	
Tap changer for MV-transformer: without / with	● / ○	
Shield winding for MV-Transformer: without / with	● / ○	
Monitoring package	○	
Station enclosure color	RAL 7004	
Transformer for external loads: without / 10 / 20 / 30 / 40 / 50 / 60 kVA	● / ○ / ○ / ○ / ○ / ○ / ○	
Medium-voltage switchgear: without / 1 feeder / 3 feeders 2 cable feeders with load-break switch, 1 transformer feeder with circuit breaker, internal arc classification IAC A FL 20 kA 1 s according to IEC 62271-200	● / ○ / ○	
Short circuit rating medium voltage switchgear (20 kA 1 s / 20 kA 3 s / 25 kA 1s)	● / ○ / ○	
Accessories for medium-voltage switchgear: without / auxiliary contacts / motor for transformer feeder / cascade control / monitoring	● / ○ / ○ / ○ / ○	
Integrated oil containment: without / with	● / ○	
Industry standards (for other standards see the inverter datasheet)	IEC 60076, IEC 62271-200, IEC 62271-202, EN50588-1, CSC Certificate	
● Standard features ○ Optional features – Not available		
Type designation	MVPS-4000-S2	MVPS-4200-S2

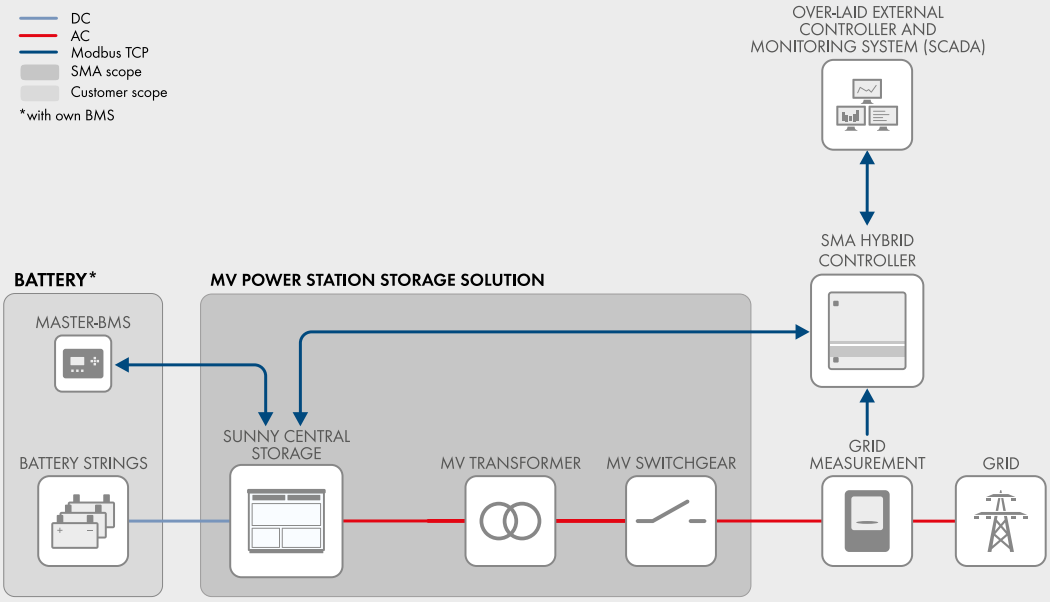
1) Data based on inverter. Further details can be found in the data sheet of the inverter.
2) KNAN = Ester with natural air cooling
3) Efficiency measured at inverter without internal power supply
4) Efficiency measured at inverter with internal power supply

Technical Data	MVPS 4400-S2	MVPS 4600-S2
Input (DC)		
Available inverters	1 x SC 4400 UP or 1 x SCS 3800 UP or 1 x SCS 3800 UP-XT	1 x SC 4600 UP or 1 x SCS 3950 UP or 1 x SCS 3950 UP-XT
Max. input voltage	1500 V	1500 V
Number of DC inputs	dependent on the selected inverters	
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) on the medium-voltage side		
Rated power at SC UP (at -25°C to + 35°C / 40°C optional 50°C)[1]	4400 kVA / 3960 kVA	4600 kVA / 4140 kVA
Rated power at SCS UP (at -25°C bis +25°C / 40°C optional 50°C)[1]	3800 kVA / 3230 kVA	3960 kVA / 3365kVA
Charging power at SCS UP-XT (at -25°C bis +25°C / 40°C optional 50°C)[1]	3950 kVA / 3300 kVA	4130 kVA / 3455 kVA
Discharging power at SCS UP-XT (at -25°C bis +25°C / 40°C optional 50°C)[1]	4400 kVA / 3740 kVA	4600 kVA / 3910 kVA
Typical nominal AC voltages	10 kV to 35 kV	10 kV to 35 kV
AC power frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Transformer vector group Dy11 / YNd11 / YNy0	● / ○ / ○	● / ○ / ○
Transformer cooling methods	KNAN[2]	KNAN[2]
Transformer no-load losses Standard / Eco Design 1 / Eco Design 2	● / ○ / ○	● / ○ / ○
Transformer short-circuit losses Standard / Eco Design 1 / Eco Design 2	● / ○ / ○	● / ○ / ○
Max. total harmonic distortion	< 3%	
Reactive power feed-in (up to 60% of nominal power)	○	
Power factor at rated power / displacement power factor adjustable	1 / 0.8 overexcited to 0.8 underexcited	
Inverter efficiency		
Max. efficiency[3] / European efficiency[3] / CEC weighted efficiency[4]	98.8% / 98.7% / 98.5%	98.8% / 98.7% / 98.5%
Protective devices		
Input-side disconnection point	DC load-break switch	
Output-side disconnection point	Medium-voltage vacuum circuit breaker	
DC overvoltage protection	Surge arrester type I	
Galvanic isolation	●	
Internal arc classification medium-voltage control room (according to IEC 62271-202)	IAC A 20 kA 1 s	
General Data		
Dimensions (W / H / D)	6058 mm / 2896 mm / 2438 mm	
Weight	< 18 t	
Self-consumption (max. / partial load / average)[1]	< 8.1 kW / < 1.8 kW / < 2.0 kW	
Self-consumption (stand-by)[1]	< 370 W	
Ambient temperature -25°C to +45°C / -25°C to +55°C / -40°C to +45°C	● / ○ / ○	
Degree of protection according to IEC 60529	Control rooms IP23D, inverter electronics IP54	
Environment: standard / harsh	● / ○	
Degree of protection according to IEC 60721-3-4 (4C1, 4S2 / 4C2, 4S4)	● / ○	
Maximum permissible value for relative humidity	95% (for 2 months/year)	
Max. operating altitude above mean sea level 1000 m / 2000 m	● / ○	
Fresh air consumption of inverter	6500 m³/h	
Features		
DC terminal	Terminal lug	
AC connection	Outer-cone angle plug	
Tap changer for MV-transformer: without / with	● / ○	
Shield winding for MV-Transformer: without / with	● / ○	
Monitoring package	○	
Station enclosure color	RAL 7004	
Transformer for external loads: without / 10 / 20 / 30 / 40 / 50 / 60 kVA	● / ○ / ○ / ○ / ○ / ○ / ○	
Medium-voltage switchgear: without / 1 feeder / 3 feeders 2 cable feeders with load-break switch, 1 transformer feeder with circuit breaker, internal arc classification IAC A FL 20 kA 1 s according to IEC 62271-200	● / ○ / ○	
Short circuit rating medium voltage switchgear (20 kA 1 s / 20 kA 3 s / 25 kA 1s)	● / ○ / ○	
Accessories for medium-voltage switchgear: without / auxiliary contacts / motor for transformer feeder / cascade control / monitoring	● / ○ / ○ / ○ / ○	
Integrated oil containment: without / with	● / ○	
Industry standards (for other standards see the inverter datasheet)	IEC 60076, IEC 62271-200, IEC 62271-202, EN50588-1, CSC Certificate	
● Standard features ○ Optional features – Not available		
Type designation	MVPS-4400-S2	MVPS-4600-S2

System diagram with Sunny Central UP



System diagram with Sunny Central Storage UP



TRACKER Agile™-1P

Dual-Row

About TrinaTracker

Excellent Bankability

Trina Solar was ranked top in the list of "Top Bankable Module Supplier" released by Bloomberg New Energy Finance (BNF) for five consecutive years

Multiple Product Lines For All Applications

Multiple product lines developed by experienced International R&D team for meeting market demands in all application scenarios

Superb Reliability and High Quality

Leading quality management system and over 20 years product quality control experience in the industry

Efficient Engineering Design Expert

Systematic and high efficient workflow for presales service to guarantee prompt engineering design

Unified Products Delivery Management

Global supply chain management of core equipments in solar farm (modules and trackers) with unified delivery channel

Two Rows per Tracker

Agile™-1P is a dual-row tracker with one primary slewing drive in one row and one secdonary slewing drive in another row.
Two slewing drives share one motor and one TCU.

Innovative SuperTrack Technology

According to real-time weather and actual terrain conditions, smart algorithm dynamically optimizes tracking angle, increases receiving radiation and reduces shading loss .

Up to 8% yield gain

More Modules per Tracker

By adopting one in portrait (1P) design, Agile can install up to 60 modules per row.

Compatible with modules up to 670W+

Designed for Challenging Conditions

The Agile™-1P has been designed for sites that have both challenging terrain and high wind conditions

Up to 20% N-S slope.

Higher Reliability

The two slewing drives in Agile™-1P are connected by a transmission bar with a cardan design that improves the transmission efficiency, also has an optimized stow position and alarm strategy for a safer and more robust structure.

TRINA CLAMP

Trina Clamp is a proprietary product that is quick and easy to use with the 1P configutation, reducing the installation time and costs.

WIND TUNNEL TESTED BY CPP

Detailed wind tunnel test methodology to reproduce the most realistic tracker behavior and analyze the aerrolastic effects that impact tracker structures.

Full aeroelastic model test.

CE 1035

UL LISTED [PV SOLAR TRACKER] E508730

cere IEC 62817:2014 A1: 2017 CERTIFIED Certificate no. 20776-CER-E1

ISO 9001 ISO 14001 ISO 45001 BUREAU VERITAS Certification

DNV·GL

TECHNICAL SPECIFICATIONS

GENERAL FEATURES

Solar tracker type	Horizontal Single-Axis with two rows
Tracking range	±60° (120°)
Driver	Cardan joined slewing drive
Configuration	One module in portrait (1P) up to 2 strings per row (1500 V string)
Solar module supported	Framed
Foundation options	Direct ramming, Pre-drilling + ramming, Micropile and PHC piles
Pile section	W, compatible with IPE, IPEA, HEA and HEB(1)
Modules attachment	Bolts, Rivets, Clamps (frameless)
Piles per MW (550Wp module)	~273 piles/MW(2) (60 modules per row)
(670 Wp module)	~248 piles/MW(2) (54 modules per row)
Terrain adaptability	20% N-S, 10% E-W(3)
Wind and snow loads tolerance	Tailored to site requirement
Rear shading factor	1.27%
Critical wind speed	47m/s

STRUCTURE

Material	High Yield Strength Steel
Coating	HDG, Pregalvanized & ZM(4)

ELECTRONIC CONTROLLER SPECIFICATIONS

Controller	Electronic board with microprocessor
Ingress protection marking	IP65
Tracking method	Astronomical algorithms + SuperTrack technology (5)
Advanced wind control	Customizable
Anemometer	Cup / Ultrasonic
Night-time stow	Configurable
Communication with the tracker	Wired option: RS 485 Wireless option: LoRa/Zigbee
Operating conditions	Altitude< 4000 m (6) Temperature: -30°C to 60°C
Sensors	Digital inclinometer
Power (motor drive)	DC motor: 0.15kW (7)
Power supply	Grid connection / String powered / Self-powered

WARRANTY

Structure	10 years
Driver and control components	5 years

(1) C shape piles under request
(2) Depending on layout
(3) N-S: max 20%, for slopes higher than 10% consult with TrinaTracker
E-W: max 10%, for slopes higher than 5% consult with TrinaTracker
(4) Standard configuration. Other coating under request, please consult TrinaTracker
(5) Includes smart tracking algorithm and smart backtracking algorithm
(6) Different conditions under request, please consult TrinaTracker
(7) Depending on external conditions

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

Version number: DT-T-0003 B