Trinasolar

Vertex

Inverter Matching for Trina Solar's Vertex Series Photovoltaic Modules

Contents

Inverter Ecosphere for 210 Modules

As of June 2021, mainstream inverter suppliers around the world have launched high-current inverters that match the 210 modules. The current of the single-channel maximum power point tracker (MPPT) has been upgraded to 40 A+, which fits the Vertex modules of Trina Solar perfectly.

We would like to thank the following mainstream inverter manufacturers for their strong support of the 210 modules:

HUAWEI

SUNGROW Clean power for all

上能电气 SINENG

SMA

GROWATT 古瑞瓦特

GOODWE YOUR SOLAR ENGINE

锦浪科技 GINLONG

KELONG 科华技术

KSTAR 科士达

SOFAR SOLAR

TBEA

Fronius

爱士惟 AiSWEI

FIMER

KACO new energy.

Ingeteam

禾望电气 Hopewind

sunways

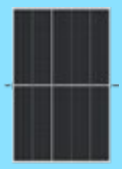
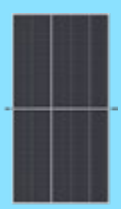
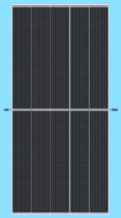
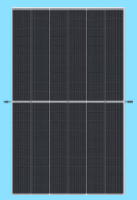
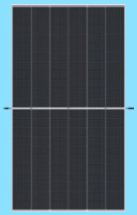
CHINT

1. The Product Family of Trina Solar Photovoltaic Modules

Trina Solar's Vertex series photovoltaic modules include two types of products, a single-sided monofacial glass-backsheet and a bifacial double-glass product, both of which use 210-mm cells. These module products can be widely used in large scale utility, industrial & commercial rooftop PV projects and residential projects. The highest power can reach 670 W.

Conventional photovoltaic modules generally use a layout design of 6×10 or 6×12 plates, but the Vertex module innovatively introduced 5×8, 5×10, 5×11, 6×10, and 6×11 cell designs based on the characteristics of 210-mm silicon wafers. These layout designs can balance the electrical performance parameters of the modules; optimize the area, weight, and other performance; improve the compatibility of system installation and design; and avoid an increase in additional costs and supply constraints of key materials, such as glass. Vertex Series Photovoltaic Modules that are currently available from Trina are listed in Table 1.

Table 1. Trina Solar Vertex Series module products

Module	Vertex S DE09 series	Vertex module DEx18 series	Vertex module DEx19 series	Vertex module DEx20 series	Vertex module DEx21 series
Layout	40-cell layout	50-cell layout	55-cell layout	60-cell layout	66- cell layout
Dimensions	1754×1096	2187×1102	2384×1096	2172×1303	2384×1303
Power range	390~410W	485~510W	530~555W	580~605W	635~670W
Segments	Residential C&I	Residential C&I	Full scenarios	Full scenarios	Full scenarios
Photo of product					

2. Range of Application

Compared with the conventional 158-mm cell, the overall area of the 210-mm cell is 75% greater, and the output current of the module is mainly determined by the area of a single cell. In order to balance the current and voltage values of the modules, Trina Solar creatively adopted a "1/3 cut" design for the DE09/18 series of modules. The short-circuit current of the modules is about 12 A, and the inverter selection is no different from that for conventional modules. The DEx19, DEx20, and DEx21 series Vertex modules followed the conventional "half cut" design, and the output current of the modules was increased to 17 A+. This white paper addresses only the adaptation analysis and configuration of string inverters for DEx19, DEx20, and DEx21 series single-sided monofacial glass-backsheet and bifacial double-glass modules. The current and voltage parameters of the bifacial modules in each model are as follows:

Table 2 Electrical parameters of Vertex Modules

Parameters/module type	DEG19C.20	DEG20C.20	DEG21C.20
Maximum power	550 W	600 W	670 W
Operating voltage at maximum power	31.8 V	34.6 V	38.5 V
Operating current at maximum power	17.29 A	17.34 A	17.43 A
Open-circuit voltage	38.1 V	41.7 V	46.3 V
Short-circuit current	18.39 A	18.42 A	18.55A

The inverter configuration analysis described below are for reference only, The project design should follow the local design specifications and be based on the design of a qualified professional organization. The configuration analysis given here is based on the conditions in table 3.

Table 3 Inverter configuration conditions

Modules	DEx19, DEx20, and DEx21 series single-sided /bifacial modules
Inverters	Mainstream string inverters on the market Note: There is no matching problem between 210 modules and centralized inverters, so fit analysis is not required.
Reference ambient temperature	−10°C
Maximum system voltage	Utility: 1500 V, C&I/residential: 1000 V/1100 V

The inverter matching database released by Trina Solar will be updated regularly according to market trends to provide customers with the most convenient product services. Currently, it covers 19 mainstream inverter manufacturers in the world, with more than 180 products. Some inverter products are not included, but more inverter manufacturers are welcome to join the Trina Solar 210 product ecosphere. The same type of inverter may have different nominal power in different regions, the following inverter product information may be outdated, but if you have questions, please contact Trina Solar.

3. Overview of the Capacity Ratio of Photovoltaic Power Generation Systems

3.1 Definition of Capacity Ratio

In a photovoltaic power generation system, the sum of the nominal power of the installed photovoltaic modules is called the installed capacity. For a single-sided module, the installed capacity refers to the sum of the nominal powers of the photovoltaic modules installed in the photovoltaic power generation system. For a bifacial module, the installed capacity of the front side refers to the sum of the nominal power of the front side of the photovoltaic modules installed in the photovoltaic power generation system, and the installed capacity of the back side refers to the sum of the nominal power of the back side of the photovoltaic modules installed in the photovoltaic power generation system. The installed capacity of photovoltaic power generation systems with bifacial modules refers to its front-side installed capacity.

In the photovoltaic power generation system, the sum of the nominal active power of the installed inverters is called the nominal capacity. Moreover, in the photovoltaic power generation system, the ratio of the installed capacity to the nominal capacity is called the capacity ratio.

In the early the photovoltaic system design, the installed capacity of the photovoltaic power generation system was close to the nominal capacity, that is, the capacity ratio was approximately equal to 1. However, owing to local environmental conditions, system operation modes, module degradation, and system loss, the DC power reaching the inverter could not be maintained at the nominal power of the system over an extended period of time, lowering the utilization rate of the system.

With the advent of the era of affordable photovoltaic power generation, the cost per kilowatt-hour of the system had to be reduced. Therefore, it has become a trend in the industry to lower the kilowatt-hour cost of the system by raising the capacity

ratio of the system. Moreover, capacity ratio has been mentioned in the standards of some countries and regions. For example, in China' s newly approved *Specification for Photovoltaic Power Generation System Performance* (NB/T 10394-2020), the selection of the capacity ratio must integrate the irradiation level at the location of the facility, the technical approach of the project, and the type of module used in the project. The maximum capacity ratio can reach 1.8:1. In the *Code for Design of Photovoltaic Power Station* (GB 50797) (Draft for Soliciting Comments) of China, the design of the capacity ratio in regions of different light resources has also been appropriately relaxed; that is, the ratio should not exceed 1.2 in regions with Category I solar energy resources, 1.4 in Category II solar resource regions, and 1.8 in Category III solar resource regions.

In this context, to meet the requirements of the capacity ratio in different regions, the matching requirement of photovoltaic modules and inverters has become higher in response to market demand. The appearance of high-current modules, such as the 210 modules and inverters with 20 A or greater current/string, is the result of this.

3.2 Capacity Ratio Stages

Increasing the DC/AC capacity ratio of the PV plant is conducive to smoothing the output power of the photovoltaic power station, saving the equipment investment, and optimizing the operating state of the power station, Based on the output characteristics of the photovoltaic power generation system, the increase in capacity ratio is mainly divided into two stages:

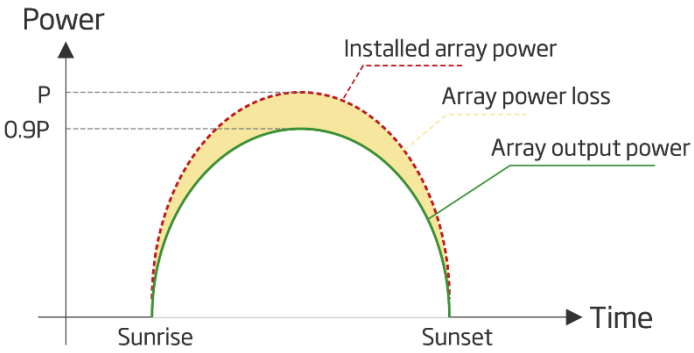


Figure 1 Before Phase 1, capacity ratio compensation

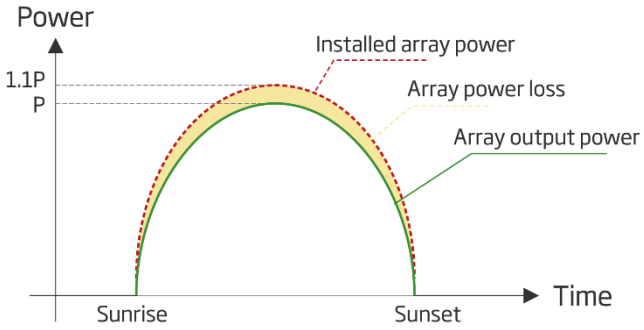


Figure 2 After Phase 1, capacity ratio compensation

Phase 1: Compensational increase of the capacity ratio. The purpose of a compensational increase of the capacity ratio is to make the actual maximum output of the inverter reach the nominal power of the inverter by raising the capacity of the module to compensate for various losses.

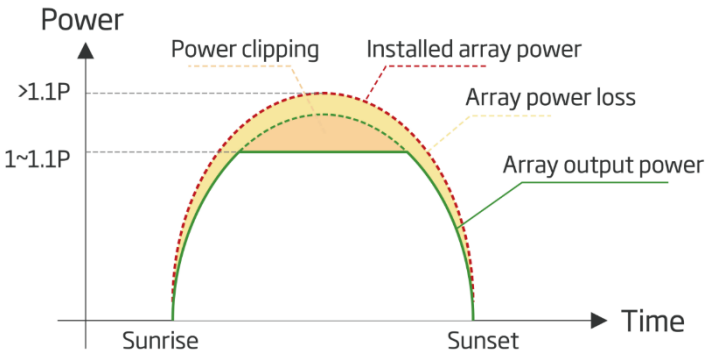


Figure 3 Phase 2, active increase of capacity ratio

The purpose of an active increase of capacity ratio is to increase the operating time of the system at full load by further increasing the capacity of the module. The photovoltaic system has power limited for a certain period of time around noon when the irradiance is strong, but the LCOE of the system reaches the lowest value at that time; that is, the profit is maximized.

4. Matching analysis and configuration for Utility-scale String Inverters

Beginning in 2021, major inverter manufacturers of the world successively released higher-current string inverters. The power of string inverters used in utility-scale projects is mainly 350 kW, and the MPPT current is upgraded to more than 40 A to support single-string current of 20 A or higher. This matches the 210-series products perfectly, each inverter manufacture focuses on a different technical approach. For different types of PV projects, the inverters have excellent selectivity and adaptability.

The inverter configuration in this chapter are suitable for use in medium-/high-voltage grid-connected photovoltaic projects.

Table: Matching inverters to 210 modules

Brands	210@550W	210@600W	210@670W
HUAWEI	√	√	√
SUNGROW	√	√	√
上能电气 SINENG	√	√	√
GROWATT	√	√	√
GOODWE	√	√	√
锦浪科技	√	√	√
KELONG 科华技术	√	√	√
KSTAR 科士达	√	√	√
TBEA 特变电工	√	√	√
SOFAR SOLAR	√	√	√
SMA	√	√	√
FIMER	√	√	√
KACO new energy	√	√	√
Ingeteam	√	√	√
Fronius	√	√	√
CHNT	√	√	√

√ : matched

Based on different product circuits, the MPPT specifications of high-current inverters currently on the market are mainly 60 A, 40 A/45 A, and 100 A, with multiple-string input. They may be matched to different capacity ratios and grouped with 210 modules to achieve the lowest LCOE.

The 210 modules adopt a low-voltage design. Under the 1500 V system voltage, a greater number of 210 modules can be connected in series, which greatly reduces the string units and thereby saves on the number of cables and auxiliary materials, structure, and pile foundations, and their construction costs, thus reducing the system BOS costs. The present high-current string inverters are compatible with 210 modules and other previous modules. With the higher string power of the 210 modules, the desired capacity ratio can be achieved without fully connecting the DC side of the inverter in most scenarios.

During the design and construction process, the photovoltaic strings should be properly connected according to the MPPT structure of the inverter to avoid loss of power generation. The figures below are diagrams of three connections for mainstream inverters. The users should verify with the inverter supplier for the specific usage method to avoid misconnections

Circuit 1: For 60 A/MPPT, up to 3 strings may be connected to each MPPT. With 8 MPPTs, the inverter may support the input of a maximum of 24 strings. The maximum achievable DC/AC ratio is 1.5 or more.

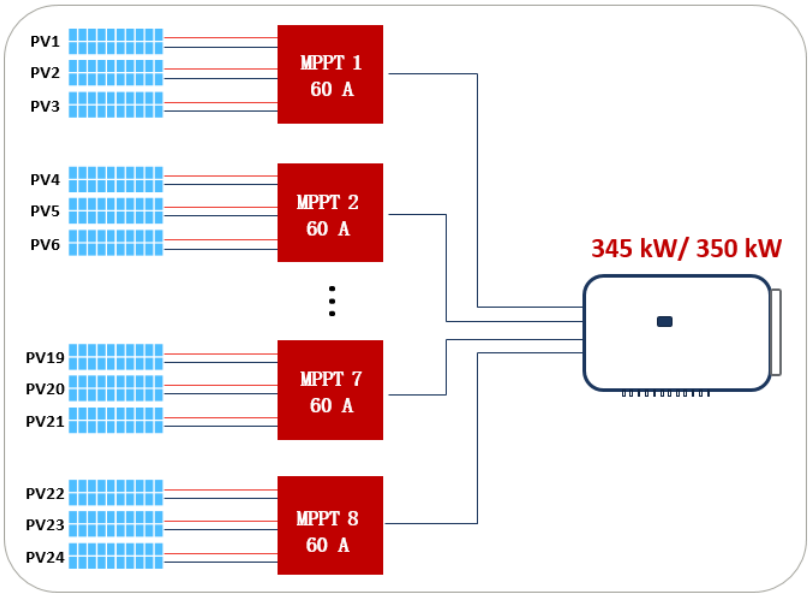


Figure 4 Inverter connection diagram of Circuit 1

Circuit 2: For 40–45 A/MPPT, up to 2 strings may be connected to each MPPT. With 12 MPPTs, the inverter may support the input of a maximum of 24 strings. The maximum achievable DC/AC ratio is 1.5 or more.

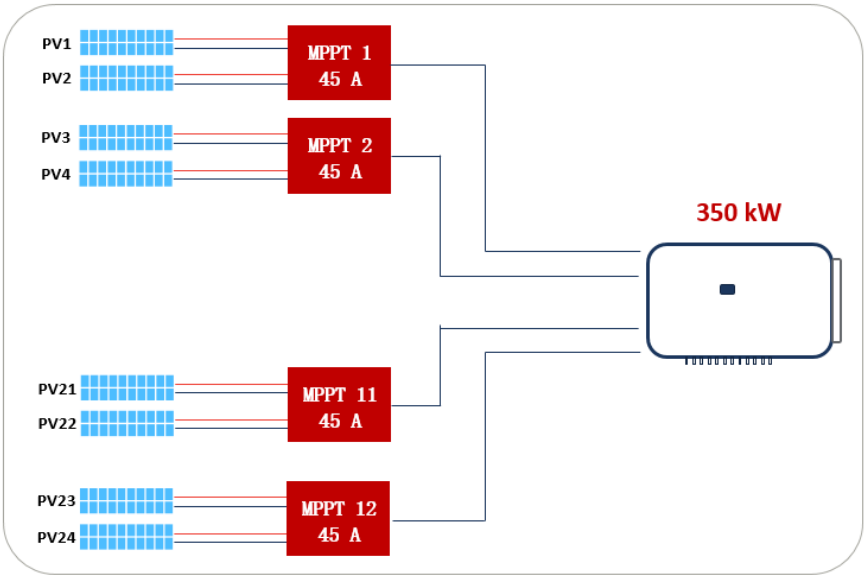


Figure 5 Inverter connection diagram of Circuit 2

Circuit 3: For 100 A/MPPT, up to 4–5 strings may be connected to each MPPT. With 3 MPPTs, the inverter may support the input of a maximum of 14 strings. The maximum achievable DC/AC ratio is 1.5 or more.

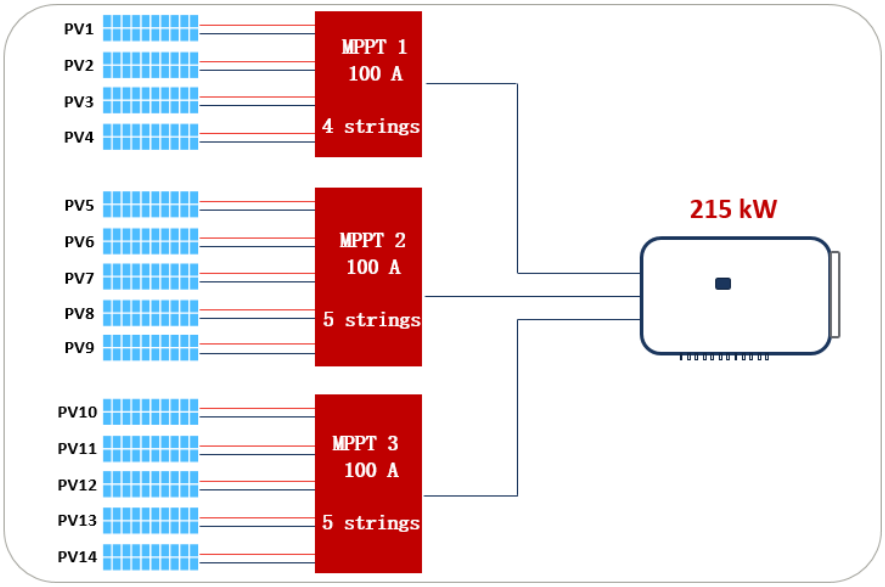


Figure 6 Inverter connection diagram of Circuit 3

The above connection diagrams indicate the maximum number of input channels for each of the corresponding inverters. The number of strings connected to the inverter is different for different project requirements, so the specific configuration of the inverter also changes with the project. In principle, all the MPPTs of the inverter are recommended to be used. If the number of connections of each MPPT is unbalanced (e.g., some MPPTs are connected to two strings while others are connected to one string), then the operator of the inverter should follow the manufacturer's user manual or installation manual or consult with the inverter manufacturer. To achieve the optimal operation efficiency, MPPTs with a large number of connected strings should be divided.

Inverter configuration analysis of utility scale PV plant is based on the following conditions:

Maximum system voltage	1500 V
Reference ambient temperature	-10 ℃
Max number of modules per string for DEx19	36
Max number of modules per string for DEx20	33
Max number of modules per string for DEx21	29

4.1 Inverter matching of DEx19 series modules for utility-scale project

Trina Solar' s DEx19 series modules are designed with a 55-cell layout, with a maximum power of 555 W. The range of the operating current of the modules for different power levels is between 17.04 A and 17.45 A.

Inverter Parameters					DC Integration					AC output	
Brand	Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
HUAWEI	SUN2000-345KTL-H0	8/32	60A×8	1500V	210-550W	36	3×8	24	475200	315000	1.509
HUAWEI	SUN2000-215KTL-H3	3/14	100A×3	1500V	210-550W	36	4/5/5	14	277200	196000	1.414
SUNGROW	SG350HX	12/24	40A×12	1500V	210-550W	36	2×12	24	475200	320000	1.485
上能电气 SINENG	SP-275K-H	12/24	40A×12	1500V	210-550W	36	2×12	24	475200	250000	1.901
上能电气 SINENG	SP-320K-H	12/24	40A×12	1500V	210-550W	36	2×12	24	475200	320000	1.485
GOODWE	GW250KN-HT	6/18	60A×6	1500V	210-550W	36	3×6	18	356400	225000	1.584
SMA	Sunny Highpower 150-20	1/1	180A×1	1500V	210-550W	36	10×1	10	198000	150000	1.32
锦浪科技	G6-GU320K-EHV	12/24	45A×12	1500V	210-550W	36	2×12	24	475200	320000	1.485
KELONG 科华技术	SPI350K-B-H	12/24	40A×12	1500V	210-550W	36	2×12	24	475200	350000	1.358
KELONG 科华技术	SPI250K-B-H	6/18	60A×6	1500V	210-550W	36	3×6	18	356400	250000	1.426
KSTAR 科士达	KSG-320KTH	8/32	60A×8	1500V	210-550W	36	3×8	24	475200	320000	1.485
KSTAR 科士达	KSG-250UH	12/24	40A×12	1500V	210-550W	36	2×12	24	475200	250000	1.901

Inverter Parameters					DC Integration					AC output	
Brand	Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
TBEA 特变电工	TS330KTL-HV	12/24	48A×12	1500V	210-550W	36	2×12	24	475200	330000	1.440
TBEA 特变电工	TS315KTL-HV	12/24	48A×12	1500V	210-550W	36	2×12	24	475200	315000	1.509
FIMER	PVS-350-TL	12/24	45A×12	1500V	210-550W	36	2×12	24	475200	350000	1.358
FIMER	PVS-175-TL	12/24	22A×12	1500V	210-550W	36	12×1	12	237600	175000	1.358
KACO new energy	165TL3	1/1	183A×1	1500V	210-550W	36	10×1	10	198000	165000	1.20
KACO new energy	155TL3	1/1	183A×1	1500V	210-550W	36	10×1	10	198000	155000	1.277
Ingeteam	160TL PRO	1/20	168A×1	1500V	210-550W	36	9×1	9	178200	148200	1.202
CHINT	CPS SCH275KTL-DO	6/18	60A×6	1500V	210-550W	36	3×6	18	356400	275000	1.296

4.2 Inverter matching of DEx20 series modules for utility-scale project

Trina Solar's DEx20 series modules are designed with a 60-cell layout, with a maximum power of 605 W. The range of operating current of the modules for different power levels is between 17.16 A and 17.49 A.

Inverter Parameters					DC Integration					AC output	
Brand	Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
HUAWEI	SUN2000-345KTL-H0	8/32	60A×8	1500V	210-600W	33	3×8	24	475200	315000	1.509
HUAWEI	SUN2000-215KTL-H3	3/14	100A×3	1500V	210-600W	33	4/5/5	14	277200	196000	1.414
SUNGROW	SG350HX	12/24	40A×12	1500V	210-600W	33	2×12	24	475200	320000	1.485
上能电气 SINENG	SP-275K-H	12/24	40A×12	1500V	210-600W	33	2×12	24	475200	250000	1.901
上能电气 SINENG	SP-320K-H	12/24	40A×12	1500V	210-600W	33	2×12	24	475200	320000	1.485
GOODWE	GW250KN-HT	6/18	60A×6	1500V	210-600W	33	3×6	18	356400	225000	1.584
SMA	Sunny Highpower 150-	1/1	180A×1	1500V	210-600W	33	10×1	10	198000	150000	1.32
锦浪科技	G6-GU320K-EHV	12/24	45A×12	1500V	210-600W	33	2×12	24	475200	320000	1.485
KELONG 科华技术	SPI350K-B-H	12/24	40A×12	1500V	210-600W	33	2×12	24	475200	350000	1.358
KELONG 科华技术	SPI250K-B-H	6/18	60A×6	1500V	210-600W	33	3×6	18	356400	250000	1.426
KSTAR 科士达	KSG-320KTH	8/32	60A×8	1500V	210-600W	33	3×8	24	475200	320000	1.485
KSTAR 科士达	KSG-250UH	12/24	40A×12	1500V	210-600W	33	2×12	24	475200	250000	1.901

Inverter Parameters					DC Integration					AC output	
Brand	Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
TBEA 特变电工	TS330KTL-HV	12/24	48A×12	1500V	210-600W	33	2×12	24	475200	330000	1.440
TBEA 特变电工	TS315KTL-HV	12/24	48A×12	1500V	210-600W	33	2×12	24	475200	315000	1.509
FIMER	PVS-350-TL	12/24	45A×12	1500V	210-600W	33	2×12	24	475200	350000	1.358
FIMER	PVS-175-TL	12/24	22A×12	1500V	210-600W	33	12×1	12	237600	175000	1.358
KACO new energy	165TL3	1/1	183A×1	1500V	210-600W	33	10×1	10	198000	165000	1.200
KACO new energy	155TL3	1/1	183A×1	1500V	210-600W	33	10×1	10	198000	155000	1.277
Ingeteam	160TL PRO	1/20	168A×1	1500V	210-600W	33	9×1	9	178200	148200	1.202
CHINT	CPS SCH275KTL-DO	6/18	60A×6	1500V	210-600W	33	3×6	18	356400	250000	1.426

4.3 Inverter matching of DEx21 series modules for utility-scale project

Trina Solar' s DEx21 series modules are designed with a 66-cell layout, with a maximum power of 670W. The range of operating current of the different modules for different power levels is between 17.15 A and 17.55 A.

Inverter Parameters					DC Integration					AC output	
Brand	Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
HUAWEI	SUN2000-345KTL-H0	8/32	60A×8	1500V	210-670W	29	3×8	24	466320	315000	1.480
HUAWEI	SUN2000-215KTL-H3	3/14	100A×3	1500V	210-670W	29	4/5/5	14	272020	196000	1.388
SUNGROW	SG350HX	12/24	40A×12	1500V	210-670W	29	2×12	24	466320	320000	1.457
上能电气 SINENG	SP-275K-H	12/24	40A×12	1500V	210-670W	29	2×12	24	466320	250000	1.865
上能电气 SINENG	SP-320K-H	12/24	40A×12	1500V	210-670W	29	2×12	24	466320	320000	1.457
GOODWE	GW250KN-HT	6/18	60A×6	1500V	210-670W	29	3×6	18	349740	225000	1.554
SMA	Sunny Highpower 150-	1/1	180A×1	1500V	210-670W	29	10×1	10	194300	150000	1.295
锦浪科技	G6-GU320K-EHV	12/24	45A×12	1500V	210-670W	29	2×12	24	466320	320000	1.457
KELONG 科华技术	SPI350K-B-H	12/24	40A×12	1500V	210-670W	29	2×12	24	466320	350000	1.332
KELONG 科华技术	SPI250K-B-H	6/18	60A×6	1500V	210-670W	29	3×6	18	349740	250000	1.399
KSTAR 科士达	KSG-320KTH	8/32	60A×8	1500V	210-670W	29	3×8	24	466320	320000	1.457
KSTAR 科士达	KSG-250UH	12/24	40A×12	1500V	210-670W	29	2×12	24	466320	250000	1.865

Inverter Parameters					DC Integration					AC output	
Brand	Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
TBEA 特变电工	TS330KTL-HV	12/24	48A×12	1500V	210-670W	29	2*12	24	466320	330000	1.413
TBEA 特变电工	TS315KTL-HV	12/24	48A×12	1500V	210-670W	29	2*12	24	466320	315000	1.480
FIMER	PVS-350-TL	12/24	45A×12	1500V	210-670W	29	2×12	24	466320	350000	1.332
FIMER	PVS-175-TL	12/24	22A×12	1500V	210-670W	29	12×1	12	233160	175000	1.332
KACO new energy	165TL3	1/1	183A×1	1500V	210-670W	29	10*1	10	194300	165000	1.178
KACO new energy	155TL3	1/1	183A×1	1500V	210-670W	29	10×1	10	194300	155000	1.254
Ingeteam	160TL PRO	1/20	168A×1	1500V	210-670W	29	9*1	9	174870	148200	1.180
CHINT	CPS SCH275KTL-DO	6/18	60A×6	1500V	210-670W	29	3×6	18	349740	275000	1.272

5. Matching analysis and configuration for C&I String Inverters

Distributed photovoltaics (C&I projects), as the market with the most diverse application scenarios, has a bright future. The ultra-high power modules of Trina Solar can significantly lower the BOS of the power station and effectively assure the return on the investment.

Owing to the limitation of the maximum DC input power of the inverter, different brands of inverters can support different maximum DC/AC capacity ratios, usually around 1.2, 1.3, and 1.5. The capacity ratio values listed in the following table are close to the maximum DC/AC ratios supported by the inverter. Users can adjust the number of inverter DC input channels or the number of modules connected in series according to the actual situation of the project to adjust the target capacity ratio.

*

Brands	30KW	33KW	36KW	40KW	50/55KW	60KW	70KW	80KW	95/100KW	110KW	120KW	125KW	136KW
HUAWEI	1.47	/	1.41	1.43	/	1.43	1.23	/	1.43	1.30	/	1.14	/
SUNGROW	1.43	1.30	/	1.07	1.43	/	/	/	/	1.17	/	/	1.26
上能电气 SINENG	/	/	/	/	1.47	1.47	/	/	1.47	1.34	/	/	1.30
GROWATT	1.43	1.30	1.47	1.43	1.27	1.27	1.23	1.25	1.32	1.30	1.19	1.14	/
GOODWE	1.32	/	1.19	1.43	1.43	1.43	/	1.43	1.43	/	1.43	/	1.26
锦浪科技	1.32	1.30	1.28	1.32	1.14	1.32	1.23	1.30	1.32	1.30	/	1.14	1.05
KELONG	/	/	/	/	/	/	/	/	1.58	1.56	/	1.37	1.26
KSTAR科士达	1.32	1.30	1.28	1.27	1.27	1.32	1.23	1.23	/	1.30	/	/	1.26
SOFAR	1.43	1.47	1.47	1.43	1.43	/	/	/	/	/	/	/	/
爱士惟 AISWEI	1.47	1.34	1.23	1.47	1.47	/	/	/	/	/	/	/	/
FIMER	1.43	1.47	/	/	/	/	/	/	/	/	/	/	/
KACO	1.48	/	/	/	1.38	1.43	/	/	/	/	/	/	/
Fronius	/	/	/	/	1.58	/	/	/	1.58	/	/	/	/
Ingeteam	1.20	/	/	1.32	/	/	/	/	/	/	/	/	/
禾望电气 Hopewind	/	/	1.23	1.11	1.18	/	/	1.11	1.77	/	/	1.42	/
sunways	/	/	/	/	1.30	1.32	/	1.32	1.32	1.30	/	1.18	/
CHINT	/	/	/	/	/	/	/	/	1.36	/	/	/	1.43

matched

As high-power modules have gradually become mainstream in applications, 210 modules can also be used in rooftop distributed projects to exploit their significant BOS advantages. The major suppliers of distributed inverters on the market have released high-current string inverters for distributed power station applications. The input current of a single string has been upgraded to 20 A+ to work with 600W+ modules on rooftop to build a comprehensive ecological alliance. Moreover, even for existing C&I inverters on the market, the single-channel MPPT current is always above 20 A now. Trina Solar's 600W+ photovoltaic modules can meet the design and application requirements in the "One MPPT accessing one string" mode to achieve the target capacity ratio of 1:1 to 1:1.5. Thus, users are afforded flexible choices to meet the project requirements.

The C&I string inverter with the upgraded MPPT current can access two photovoltaic strings for each MPPT. The main parameters and connection methods of a model of the 100-kW string inverter are shown in the table below:

Table 4 Main parameters of 100 kW inverter

Inverter rated power	100 kW AC
Number of MPPT channels	6
Maximum number of input strings per MPPT	2
Current per MPPT	45A

Using the 600-W module as an example, if each inverter is connected with 12 strings, the capacity connected to the DC side is 24× 600 W × 12 = 172.8 kW. This achieves a DC/AC ratio of 1.728. Users can adjust the inverter configuration according to the project need.

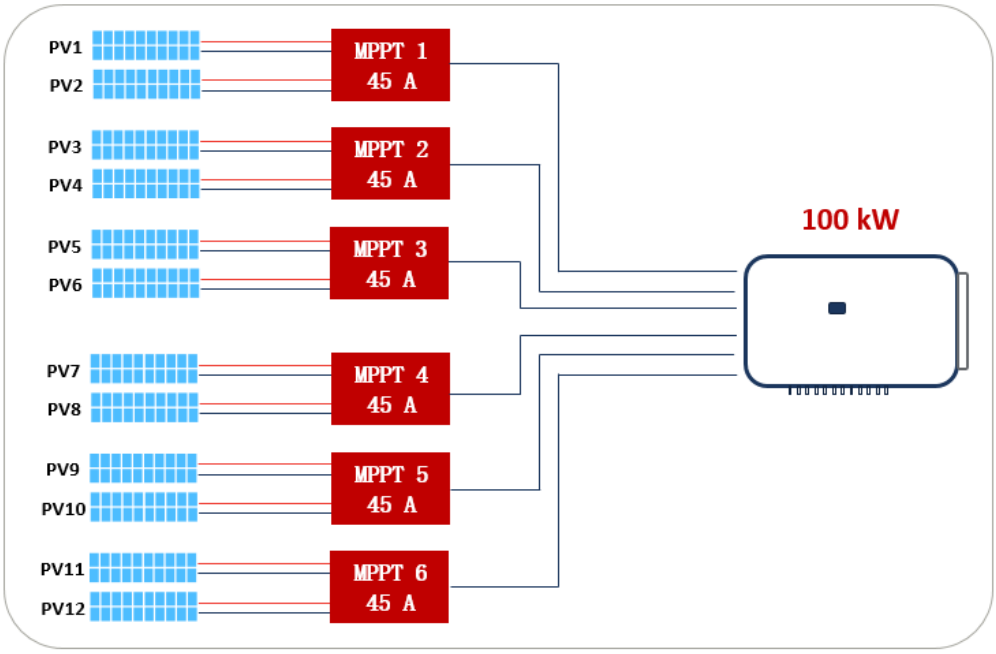


Figure 7 two strings connected into one MPPT

The current of a single string of existing C&I inverters is less than 20 A, and only one module string can be connected into one MPPT. In the example of a 60-kW string inverter, the main parameters and connection methods are listed below:

Table5 Main parameters of 100 kW inverter

Inverter rated power	60KW AC
Number of MPPT channels	6
Maximum number of input strings per MPPT	2
Current per MPPT	30A

The operating current of a 210 module is 17 A+, so each MPPT can be simply connected with one string. Taking the 600-W module as an example, if each inverter is connected with 6 strings, the access capacity of the DC side is 24× 600 W × 6 = 86.4 kW. With a max DC/AC ratio of 1.44, thus fully meets the design requirements of a C&I project.

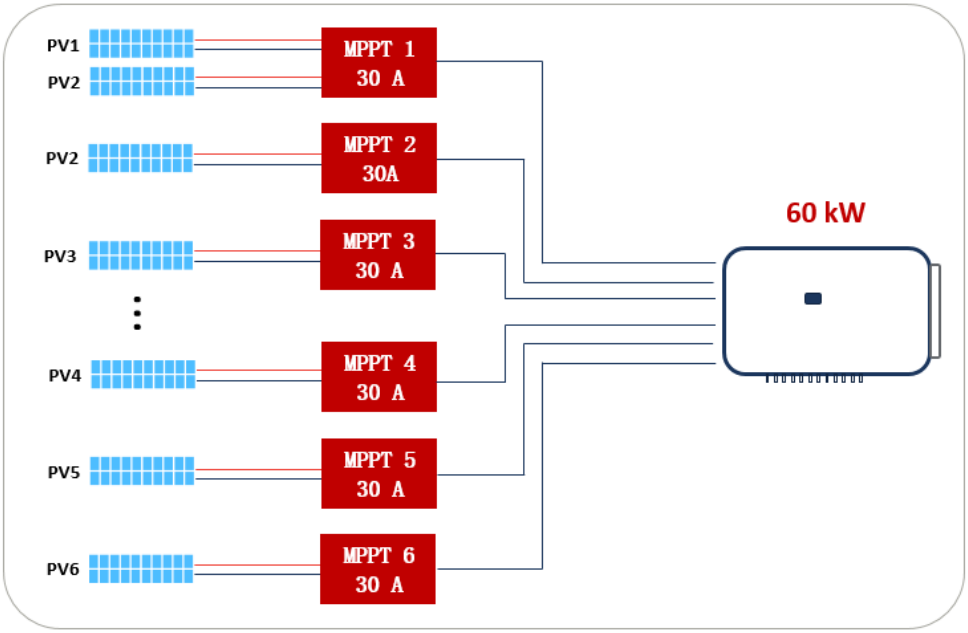


Figure 8 one string connected into one MPPT

Inverter configuration analysis for C&I projects is based on the following conditions, if you have any questions, please contact the inverter manufacturer or sales representatives of Trina Solar.

Maximum system voltage	1000V	1100V
Reference ambient temperature	-10℃	-10℃
Max number of modules per string for DEx19	24	26
Max number of modules per string for DEx20	22	24
Max number of modules per string for DEx21	20	22

5.1 HUAWEI C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
SUN2000-30KTL-M3	4/8	26A×4	1100V	220 Vac 380 Vac 3W / N + PE	210-550W	20	1×4	4	44000	30000	1.467
					210-600W	18	1×4	4	43200	30000	1.440
					210-670W	16	1×4	4	42880	30000	1.429
SUN2000-36KTL-M3	4/8	26A×4	1100V	220 Vac 380 Vac 3W / N + PE	210-550W	24	1×4	4	52800	36000	1.467
					210-600W	22	1×4	4	52800	36000	1.467
					210-670W	20	1×4	4	53600	36000	1.489
SUN2000-40KTL-M3	4/8	26A×4	1100V	220 Vac 380 Vac 3W / N + PE	210-550W	26	1×4	4	57200	40000	1.430
					210-600W	24	1×4	4	57600	40000	1.440
					210-670W	22	1×4	4	58960	40000	1.474
SUN2000-60KTL-M0	6/12	22A×6	1100V	220 V / 380V 230 V/400V 3W+(N)+PE	210-550W	26	1×6	6	85800	60000	1.430
					210-600W	24	1×6	6	86400	60000	1.440
					210-670W	22	1×6	6	88440	60000	1.474

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
SUN2000-70KTL-C1	6/12	22A×6	1100V	288V / 500V 3W+PE	210-550W	26	1×6	6	85800	70000	1.226
					210-600W	24	1×6	6	86400	70000	1.234
					210-670W	22	1×6	6	88440	70000	1.263
SUN2000-75KTL-C1	6/12	25A×6	1100V	288V / 500V 3W+PE	210-550W	26	1×6	6	85800	75000	1.144
					210-600W	24	1×6	6	86400	75000	1.152
					210-670W	22	1×6	6	88440	75000	1.179
SUN2000-100KTL-M0	10/20	26A×10	1100V	3×220 V/380V 3×230 V/400V 3W+N+PE	210-550W	26	1×10	10	143000	100000	1.430
					210-600W	24	1×10	10	144000	100000	1.440
					210-670W	22	1×10	10	147400	100000	1.474
SUN2000-110KTL-M0	10/20	26A×10	1100V	3×220 V/380V 3×230 V/400V 3W+N+PE	210-550W	26	1×10	10	143000	110000	1.300
					210-600W	24	1×10	10	144000	110000	1.309
					210-670W	22	1×10	10	147400	110000	1.340
SUN2000-125KTL-M0	10/20	26A×10	1100V	288V / 500V 3W+PE	210-550W	26	1×10	10	143000	125000	1.144
					210-600W	24	1×10	10	144000	125000	1.152
					210-670W	22	1×10	10	147400	125000	1.179

5.2 SUNGROW C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
SG30CX-P2-CN	3/6	30A×3	1100V	230 / 400V 220 / 380V 3W/ N / PE	210-550W	26	1×3	3	42900	30000	1.430
					210-600W	24	1×3	3	43200	30000	1.440
					210-670W	22	1×3	3	44220	30000	1.474
SG33CX	3/6	26A×3	1100V	230 / 400V 220 / 380V 3W/ N / PE	210-550W	26	1×3	3	42900	33000	1.300
					210-600W	24	1×3	3	43200	33000	1.309
					210-670W	22	1×3	3	44220	33000	1.340
SG40CX-P2-CN	3/6	30A×3	1100V	230 / 400V 220 / 380V 3W/ N / PE	210-550W	26	1×3	3	42900	40000	1.073
					210-600W	24	1×3	3	43200	40000	1.080
					210-670W	22	1×3	3	44220	40000	1.106
SG50CX	5/10	26A×5	1100V	230 / 400V 220 / 380V 3W/ N / PE	210-550W	26	1×5	5	71500	50000	1.430
					210-600W	24	1×5	5	72000	50000	1.440
					210-670W	22	1×5	5	73700	50000	1.474

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
SG110CX-P2-CN	9/18	30A×9	1100V	230 / 400V 3W/ N / PE	210-550W	26	1×9	9	128700	110000	1.170
					210-600W	24	1×9	9	129600	110000	1.178
					210-670W	22	1×9	9	132660	110000	1.206
SG136TX	12/24	26A×12	1100V	540V 3W / PE	210-550W	26	1×12	12	171600	136000	1.262
					210-600W	24	1×12	12	172800	136000	1.271
					210-670W	22	1×12	12	176880	136000	1.301

5.3 SINENG C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
SP-50K-L	3/10	44A×2+22A	1100V	400V 3W+N+PE	210-550W	26	1×1+2×2	5	71500	50000	1.430
					210-600W	24	1×3	5	72000	50000	1.440
					210-670W	22	1×3	5	73700	50000	1.474
SP-60K-L	3/12	44A×3	1100V	400V 3W+N+PE	210-550W	26	2×3	6	85800	60000	1.430
					210-600W	24	2×3	6	86400	60000	1.440
					210-670W	22	2×3	6	88440	60000	1.474
SP-100K-L	10/20	26A×10	1100V	400V 3W+N+PE	210-550W	26	1×10	10	143000	100000	1.430
					210-600W	24	1×10	10	144000	100000	1.440
					210-670W	22	1×10	10	147400	100000	1.474
SP-110K-L	10/20	26A×10	1100V	400V 3W+N+PE	210-550W	26	1×10	10	143000	110000	1.300
					210-600W	24	1×10	10	144000	110000	1.309
					210-670W	22	1×10	10	147400	110000	1.340
SP-136K-L	12/24	26A×12	1100V	540V 3W+PE	210-550W	26	1×10	12	171600	136000	1.262
					210-600W	24	1×10	12	172800	136000	1.271
					210-670W	22	1×10	12	176880	136000	1.301

5.4 GROWATT C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
MID 30KTL3-X	3/6	26A×3	1100V	400V/310-476V 3W+N+PE	210-550W	26	1×3	3	42900	30000	1.430
					210-600W	24	1×3	3	43200	30000	1.440
					210-670W	22	1×3	3	44220	30000	1.474
MID 33KTL3-X	3/6	26A×3	1100V	400V/310-476V 3W+N+PE	210-550W	26	1×3	3	42900	33000	1.300
					210-600W	24	1×3	3	43200	33000	1.309
					210-670W	22	1×3	3	44220	33000	1.340
MID 36KTL3-X	4/8	26A×4	1100V	400V/310-476V 3W+N+PE	210-550W	24	1×4	4	52800	36000	1.467
					210-600W	22	1×4	4	52800	36000	1.467
					210-670W	20	1×4	4	53600	36000	1.489
MID 40KTL3-X	4/8	26A×4	1100V	400V/310-476V 3W+N+PE	210-550W	26	1×4	4	57200	40000	1.430
					210-600W	24	1×4	4	57600	40000	1.440
					210-670W	22	1×4	4	58960	40000	1.474

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
MAC 50KTL3-X LV	3/10	39A×2+52A	1100V	400V/340-440V 3W+N+PE	210-550W	23	2+2+1	5	63250	50000	1.265
					210-600W	21	2+2+1	5	63000	50000	1.260
					210-670W	19	2+2+1	5	63650	50000	1.273
MAC 60KTL3-X LV	3/12	52A×3	1100V	400V/340-440V 3W+N+PE	210-550W	23	2+2+2	6	75900	60000	1.265
					210-600W	21	2+2+2	6	75600	60000	1.260
					210-670W	19	2+2+2	6	76380	60000	1.273
MAX 60KTL3 LV	6/12	26A×6	1100V	400V/340-440V 3W+N+PE	210-550W	23	1×6	6	75900	60000	1.265
					210-600W	21	1×6	6	75600	60000	1.260
					210-670W	19	1×6	6	76380	60000	1.273
MAX 60KTL3 MV	6/12	26A×6	1100V	480V/425-540V 3W+PE	210-550W	23	1×6	6	75900	60000	1.265
					210-600W	21	1×6	6	75600	60000	1.260
					210-670W	19	1×6	6	76380	60000	1.273
MAC 66KTL3-X MV	3/12	52A×3	1100V	480V/425-540V 3W+PE	210-550W	26	2+2+2	6	85800	66000	1.300
					210-600W	24	2+2+2	6	86400	66000	1.309
					210-670W	21	2+2+2	6	84420	66000	1.279

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
MAX 70KTL3 LV	6/12	26A×6	1100V	400V/340-440V 3W+N+PE	210-550W	26	1×6	6	85800	70000	1.226
					210-600W	24	1×6	6	86400	70000	1.234
					210-670W	21	1×6	6	84420	70000	1.206
MAX 70KTL3 MV	6/12	26A×6	1100V	480V/425-540V 3W+PE	210-550W	26	1×6	6	85800	70000	1.226
					210-600W	24	1×6	6	86400	70000	1.234
					210-670W	21	1×6	6	84420	70000	1.206
MAC 70KTL3-X MV	3/12	52A×3	1100V	480V/425-540V 3W+PE	210-550W	26	2+2+2	6	85800	70000	1.226
					210-600W	24	2+2+2	6	86400	70000	1.234
					210-670W	21	2+2+2	6	84420	70000	1.206
MAX 80KTL3 LV	7/14	26A×7	1100V	400V/340-440V 3W+N+PE	210-550W	26	1×7	7	100100	80000	1.251
					210-600W	24	1×7	7	100800	80000	1.260
					210-670W	21	1×7	7	98490	80000	1.231
MAX 80KTL3 MV	7/14	26A×7	1100V	480V/425-540V 3W+PE	210-550W	26	1×7	7	100100	80000	1.251
					210-600W	24	1×7	7	100800	80000	1.260
					210-670W	21	1×7	7	98490	80000	1.231

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
MAX 100KTL3-X LV	10/20	32A×10	1100V	230V/400V 3W+N+PE	210-550W	24	1×10	10	132000	100000	1.320
					210-600W	22	1×10	10	132000	100000	1.320
					210-670W	19	1×10	10	127300	100000	1.273
MAX 110KTL3-X LV	10/20	32A×10	1100V	230V/400V 3W+N+PE	210-550W	26	1×10	10	143000	110000	1.300
					210-600W	24	1×10	10	144000	110000	1.309
					210-670W	21	1×10	10	140700	110000	1.279
MAX 120KTL3-X LV	10/20	32A×10	1100V	230V/400V 3W+N+PE	210-550W	26	1×10	10	143000	120000	1.192
					210-600W	24	1×10	10	144000	120000	1.200
					210-670W	22	1×10	10	147400	120000	1.228
MAX 125KTL3-X LV	10/20	32A×10	1100V	230V/400V 3W+N+PE	210-550W	26	1×10	10	143000	125000	1.144
					210-600W	24	1×10	10	144000	125000	1.152
					210-670W	22	1×10	10	147400	125000	1.179

5.5 GOODWE C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
GW30K-MT	3/6	30A×3	1100V	400V 3W+(N)+PE	210-550W	24	1×3	3	39600	30000	1.320
					210-600W	22	1×3	3	39600	30000	1.320
					210-670W	19	1×3	3	38190	30000	1.273
GW36KS-MT	3/6	30A×3	1100V	400V 3W+(N)+PE	210-550W	26	1×3	3	42900	36000	1.192
					210-600W	24	1×3	3	43200	36000	1.200
					210-670W	22	1×3	3	44220	36000	1.228
GW40K-MT	4/8	30A×4	1100V	400V 3W+(N)+PE	210-550W	26	1×4	4	57200	40000	1.430
					210-600W	24	1×4	4	57600	40000	1.440
					210-670W	22	1×4	4	58960	40000	1.474
GW50KS-MT	5/10	30A×5	1100V	400V 3W+(N)+PE	210-550W	26	1×5	5	71500	50000	1.430
					210-600W	24	1×5	5	72000	50000	1.440
					210-670W	22	1×5	5	73700	50000	1.474

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
GW60KS-MT	6/12	30A×6	1100V	400V 3W+(N)+PE	210-550W	26	1×6	6	85800	60000	1.430
					210-600W	24	1×6	6	86400	60000	1.440
					210-670W	22	1×6	6	88440	60000	1.474
GW80K-MT	4/12	44A×4	1100V	380V 3W+(N)+PE	210-550W	26	2×4	8	114400	80000	1.430
					210-600W	24	2×4	8	115200	80000	1.440
					210-670W	22	2×4	8	117920	80000	1.474
GW100K-HT	10/20	30A×10	1100V	380V 3W+(N)+PE	210-550W	26	1×10	10	143000	100000	1.430
					210-600W	24	1×10	10	144000	100000	1.440
					210-670W	22	1×10	10	147400	100000	1.474
GW120K-HT	12/24	30A×12	1100V	380V 3W+(N)+PE	210-550W	26	1×12	12	171600	120000	1.430
					210-600W	24	1×12	12	172800	120000	1.440
					210-670W	22	1×12	12	176880	120000	1.474
GW136K-HTH	12/24	30A×12	1100V	500V 3W+PE	210-550W	26	1×12	12	171600	136000	1.262
					210-600W	24	1×12	12	172800	136000	1.271
					210-670W	22	1×12	12	176880	136000	1.301

5.6 SOLIS C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
GCI-30K-5G-PLUS	3/6	32A×3	1100V	220/380V 3W+N+PE	210-550W	24	1×3	3	39600	30000	1.320
					210-600W	22	1×3	3	39600	30000	1.320
					210-670W	20	1×3	3	40200	30000	1.340
GCI-33K-5G-PLUS	3/6	32A×3	1100V	220/380V 3W+N+PE	210-550W	26	1×3	3	42900	33000	1.300
					210-600W	24	1×3	3	43200	33000	1.309
					210-670W	21	1×3	3	42210	33000	1.279
GCI-36K-5G-PLUS	4/8	32A×4	1100V	220/380V 3W+N+PE	210-550W	21	1×4	4	46200	36000	1.283
					210-600W	19	1×4	4	45600	36000	1.267
					210-670W	17	1×4	4	45560	36000	1.266
GCI-40K-5G-PLUS	4/8	32A×4	1100V	220/380V 3W+N+PE	210-550W	24	1×4	4	52800	40000	1.320
					210-600W	22	1×4	4	52800	40000	1.320
					210-670W	19	1×4	4	50920	40000	1.273

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
GCI-50K-5G-PLUS	4/8	32A×4	1100V	480V 3W+PE	210-550W	26	1×4	4	57200	50000	1.144
					210-600W	24	1×4	4	57600	50000	1.152
					210-670W	22	1×4	4	58960	50000	1.179
G5-GC50K	5/10	32A×5	1100V	220/380V 3W+N+PE	210-550W	24	1×5	5	66000	50000	1.320
					210-600W	22	1×5	5	66000	50000	1.320
					210-670W	19	1×5	5	63650	50000	1.273
G5-GC60K	6/12	32A×6	1100V	220/380V 3W+N+PE	210-550W	24	1×6	6	79200	60000	1.320
					210-600W	22	1×6	6	79200	60000	1.320
					210-670W	19	1×6	6	76380	60000	1.273
G5-GC60K-HV	6/12	32A×6	1100V	480V 3W+PE	210-550W	24	1×6	6	79200	60000	1.320
					210-600W	22	1×6	6	79200	60000	1.320
					210-670W	19	1×6	6	76380	60000	1.273
G5-GC70K-HV	6/12	32A×6	1100V	480V 3W+PE	210-550W	26	1×6	6	85800	70000	1.226
					210-600W	24	1×6	6	86400	70000	1.234
					210-670W	22	1×6	6	88440	70000	1.263

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
GCI-80K-5G	9/18	26A×9	1100V	220/380V 3W+N+PE	210-550W	21	1×9	9	103950	80000	1.299
					210-600W	19	1×9	9	102600	80000	1.283
					210-670W	17	1×9	9	102510	80000	1.281
GCI-100K-5G-PLUS	10/20	32A×10	1100V	220/380V 3W+N+PE	210-550W	24	1×10	10	132000	100000	1.320
					210-600W	22	1×10	10	132000	100000	1.320
					210-670W	19	1×10	10	127300	100000	1.273
GCI-100K-HV-5G	10/20	26A×10	1100V	480V 3W+PE	210-550W	24	1×10	10	132000	100000	1.320
					210-600W	22	1×10	10	132000	100000	1.320
					210-670W	19	1×10	10	127300	100000	1.273
GCI-110K-5G-PLUS	10/20	32A×10	1100V	220/380V 3W+N+PE	210-550W	26	1×10	10	143000	110000	1.300
					210-600W	24	1×10	10	144000	110000	1.309
					210-670W	21	1×10	10	140700	110000	1.279
GCI-110K-HV-5G	10/20	26A×10	1100V	540V 3W+PE	210-550W	26	1×10	10	143000	110000	1.300
					210-600W	24	1×10	10	144000	110000	1.309
					210-670W	21	1×10	10	140700	110000	1.279

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
GCI-125K-BHV-5G-PLUS	10/20	32A×10	1100V	540V 3W+PE	210-550W	26	1×10	10	143000	125000	1.144
					210-600W	24	1×10	10	144000	125000	1.152
					210-670W	22	1×10	10	147400	125000	1.179
GCI-136K-BHV-5G-PLUS	10/20	32A×10	1100V	540V 3W+PE	210-550W	26	1×10	10	143000	136000	1.051
					210-600W	24	1×10	10	144000	136000	1.059
					210-670W	22	1×10	10	147400	136000	1.084

5.7 KELONG C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
SPI100K-B	6/12	45A×6	1100V	380/400/415Vac	210-550W	22	2×6	12	145200	100000	1.452
					210-600W	20	2×6	12	144000	100000	1.440
					210-670W	18	2×6	12	144720	100000	1.447
SPI110K-B	6/12	45A×6	1100V	380/400/415Vac	210-550W	24	2×6	12	158400	110000	1.440
					210-600W	22	2×6	12	158400	110000	1.440
					210-670W	20	2×6	12	160800	110000	1.462
SPI125K-B	6/12	45A×6	1100V	380/400/415Vac	210-550W	26	2×6	12	171600	125000	1.373
					210-600W	24	2×6	12	172800	125000	1.382
					210-670W	22	2×6	12	176880	125000	1.415
SPI136K-B	6/12	50A×6	1100V	540Vac	210-550W	26	2×6	12	171600	136000	1.262
					210-600W	24	2×6	12	172800	136000	1.271
					210-670W	22	2×6	12	176880	136000	1.301
SPI150K-B	6/12	50A×6	1100V	540Vac	210-550W	26	2×6	12	171600	150000	1.144
					210-600W	24	2×6	12	172800	150000	1.152
					210-670W	22	2×6	12	176880	150000	1.179

5.8 KSTAR C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
KSG-30KT	2/4	40A×2	1100V	400V 3W+(N)+PE	210-550W	24	1×1+2×1	3	39600	30000	1.320
					210-600W	22	1×1+2×1	3	39600	30000	1.320
					210-670W	19	1×1+2×1	3	38190	30000	1.273
KSG-33KT	2/4	40A×2	1100V	400V 3W+(N)+PE	210-550W	26	1×1+2×1	3	42900	33000	1.300
					210-600W	24	1×1+2×1	3	43200	33000	1.309
					210-670W	21	1×1+2×1	3	42210	33000	1.279
KSG-36KT	2/4	40A×2	1100V	400V 3W+(N)+PE	210-550W	21	2×2	4	46200	36000	1.283
					210-600W	19	2×2	4	45600	36000	1.267
					210-670W	17	2×2	4	45560	36000	1.266
KSG-40KT	2/4	40A×2	1100V	400V 3W+(N)+PE	210-550W	23	2×2	4	50600	40000	1.265
					210-600W	21	2×2	4	50400	40000	1.260
					210-670W	19	2×2	4	50920	40000	1.273
KSG-50KT	5/10	40A×5	1100V	400V 3W+(N)+PE	210-550W	23	1×5	5	63250	50000	1.265
					210-600W	21	1×5	5	63000	50000	1.260
					210-670W	19	1×5	5	63650	50000	1.273

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
KSG-60KT	5/10	40A×5	1100V	400V 3W+(N)+PE	210-550W	24	1×2+4×1	6	79200	60000	1.320
					210-600W	22	1×2+4×1	6	79200	60000	1.320
					210-670W	19	1×2+4×1	6	76380	60000	1.273
KSG-70KT	6/12	40A×6	1100V	400V 3W+(N)+PE	210-550W	26	1×6	6	85800	70000	1.226
					210-600W	24	1×6	6	86400	70000	1.234
					210-670W	22	1×6	6	88440	70000	1.263
KSG-80KT	6/12	40A×6	1100V	400V 3W+(N)+PE	210-550W	26	1×6	6	85800	70000	1.226
					210-600W	24	1×6	6	86400	70000	1.234
					210-670W	22	1×6	6	88440	70000	1.263
KSG-110CL	10/20	40A×10	1100V	400V 3W+(N)+PE	210-550W	26	1×10	10	143000	110000	1.300
					210-600W	24	1×10	10	144000	110000	1.309
					210-670W	21	1×10	10	140700	110000	1.279
KSG-136UM	12/24	40A×12	1100V	500V 3W+PE	210-550W	26	1×12	12	171600	136000	1.262
					210-600W	24	1×12	12	172800	136000	1.271
					210-670W	22	1×12	12	176880	136000	1.301

5.9 SOFAR C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
30KTLC-G3	2/4	40A×2	1100V	220/380V 3W+N+PE	210-550W	26	1×1+2×1	3	42900	30000	1.430
					210-600W	24	1×1+2×1	3	43200	30000	1.440
					210-670W	22	1×1+2×1	3	44220	30000	1.474
33KTLC-G3	2/4	40A×2	1100V	220/380V 3W+N+PE	210-550W	22	2×2	4	48400	33000	1.467
					210-600W	20	2×2	4	48000	33000	1.455
					210-670W	18	2×2	4	48240	33000	1.462
36KTLC-G3	2/4	40A×2	1100V	220/380V 3W+N+PE	210-550W	24	2×2	4	52800	36000	1.467
					210-600W	22	2×2	4	52800	36000	1.467
					210-670W	20	2×2	4	53600	36000	1.489
40KTLC-G3	3/6	40A×3	1100V	220/380V 3W+N+PE	210-550W	26	2×1+1×2	4	57200	40000	1.430
					210-600W	24	2×1+1×2	4	57600	40000	1.440
					210-670W	22	2×1+1×2	4	58960	40000	1.474

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
45KTLC-G3	3/6	40A×3	1100V	220/380V 3W+N+PE	210-550W	24	1×1+2×2	5	66000	45000	1.467
					210-600W	22	1×1+2×2	5	66000	45000	1.467
					210-670W	20	1×1+2×2	5	67000	45000	1.489
50KTLC-G3	3/6	40A×3	1100V	220/380V 3W+N+PE	210-550W	26	1×1+2×2	5	71500	50000	1.430
					210-600W	24	1×1+2×2	5	72000	50000	1.440
					210-670W	22	1×1+2×2	5	73700	50000	1.474

5.10 FIMER C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
PVS-30-TL	4/8	2×26A/2×22A	1100V	380V/400V 3W+PE/ 4W+PE	210-550W	26	1×3	3	42900	30000	1.430
					210-600W	24	1×3	3	43200	30000	1.440
					210-670W	22	1×3	3	44220	30000	1.474
PVS-33-TL	4/8	26A+22A	1100V	380V/400V 3W+PE/ 4W+PE	210-550W	22	1×4	4	48400	33000	1.467
					210-600W	20	1×4	4	48000	33000	1.455
					210-670W	18	1×4	4	48240	33000	1.462

5.11 KACO C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
29TL3-LV XL	1/6	1×85A	1100V	138 V / 240 V 127 V / 220 V 120 V / 208 V	210-550W	26	3	3	42900	29000	1.479
					210-600W	24	3	3	43200	29000	1.490
					210-670W	21	3	3	42210	29000	1.456
50.0 TL3 XL	1/10	1×90A	1100V	240 V / 415 V 230 V / 400 V 220 V / 380 V	210-550W	25	5	5	68750	50000	1.375
					210-600W	23	5	5	69000	50000	1.380
					210-670W	21	5	5	70350	50000	1.407
60.0 TL3 XL	1/12	1×107A	1100V	240 V / 415 V 230 V / 400 V 220 V / 380 V	210-550W	26	5	5	71500	50000	1.430
					210-600W	24	5	5	72000	50000	1.440
					210-670W	22	5	5	73700	50000	1.474
87.0 TL3	1~2/8	1×160A	1500V	380 V 3P//PE	210-550W	36	7	7	138600	87000	1.593
					210-600W	33	7	7	138600	87000	1.593
					210-670W	29	7	7	136010	87000	1.563

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
92.0 TL3	1~2/8	1×160A	1500V	400 V 3P//PE	210-550W	36	7	7	138600	92000	1.507
					210-600W	33	7	7	138600	92000	1.507
					210-670W	29	7	7	136010	92000	1.478
105 TL3	1~2/10	1×183A	1500V	400 V 3P//PE	210-550W	36	8	8	158400	105000	1.509
					210-600W	33	8	8	158400	105000	1.509
					210-670W	29	8	8	155440	105000	1.480
110-TL3 US	1~2/8	1×160A	1500V	480 V 3P//PE	210-550W	36	8	8	158400	110000	1.440
					210-600W	33	8	8	158400	110000	1.440
					210-670W	29	8	8	155440	110000	1.413
125-TL3 US	1~2/10	1×183A	1500V	480 V 3P//PE	210-550W	36	9	9	178200	125000	1.426
					210-600W	33	9	9	178200	125000	1.426
					210-670W	29	9	9	174870	125000	1.399

5.12 FRONIUS C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
TAURO 50-3-D	3/14	134A	1000V	230 V / 400 V 220 V / 380 V 3/N/PE; 3/PEN	210-550W	24	1/2/3	6	79200	50000	1.584
					210-600W	22	1/2/3	6	79200	50000	1.584
					210-670W	20	1/2/3	6	80400	50000	1.608
TAURO ECO 100-3-D	1/22	175A	1000V	230 V / 400 V 220 V / 380 V 3/N/PE; 3/PEN	210-550W	24	4/4/4	12	158400	100000	1.584
					210-600W	22	4/4/4	12	158400	100000	1.584
					210-670W	20	4/4/4	12	160800	100000	1.608

5.13 INGETEAM C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
3Play 33TL	1/1	61A	1000V	400 V	210-550W	24	1×3	3	39600	33000	1.200
					210-600W	22	1×3	3	39600	33000	1.200
					210-670W	20	1×3	3	40200	33000	1.218
3Play 40TL M480	2/10	40A×2	1000V	480V	210-550W	24	2×2	4	52800	40000	1.320
					210-600W	22	2×2	4	52800	40000	1.320
					210-670W	20	2×2	4	53600	40000	1.340
3Play 55KW	1/24	185A	1100V	220V	210-550W	24	1×6	6	79200	55000	1.440
					210-600W	22	1×6	6	79200	55000	1.440
					210-670W	20	1×6	6	80400	55000	1.462
3Play 95KW	1/24	185A	1100V	380V	210-550W	24	1×10	10	132000	95000	1.389
					210-600W	22	1×10	10	132000	95000	1.389
					210-670W	20	1×10	10	134000	95000	1.411

5.14 AISWEI C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
30K-LT-G2	3/6	26A×3	1100V	220/380V 230/400V	210-550W	26	1×3	3	42900	30000	1.430
					210-600W	24	1×3	3	43200	30000	1.440
					210-670W	22	1×3	3	44220	30000	1.474
33K-LT-G2	3/6	26A×3	1100V	220/380V 230/400V	210-550W	26	1×3	3	42900	33000	1.300
					210-600W	24	1×3	3	43200	33000	1.309
					210-670W	22	1×3	3	44220	33000	1.340
36K-LT-G2	3/6	26A×3	1100V	220/380V 230/400V	210-550W	26	1×3	3	42900	36000	1.192
					210-600W	24	1×3	3	43200	36000	1.200
					210-670W	22	1×3	3	44220	36000	1.228
40K-LT-G2	4/8	26A×4	1100V	220/380V 230/400V	210-550W	26	1×4	4	57200	40000	1.430
					210-600W	24	1×4	4	57600	40000	1.440
					210-670W	22	1×4	4	58960	40000	1.474
50K-LT-G2	5/10	26A×5	1100V	220/380V 230/400V	210-550W	24	1×5	5	66000	50000	1.320
					210-600W	24	1×5	5	72000	50000	1.440
					210-670W	22	1×5	5	73700	50000	1.474

5.15 HOPEWIND C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
hopeSun 36KTL	3/8	33A×2+22A	1100V	400V	210-550W	26	1×3	3	42900	36000	1.192
					210-600W	24	1×3	3	43200	36000	1.200
					210-670W	22	1×3	3	44220	36000	1.228
hopeSun 40KTL	3/8	33A×2+22A	1100V	400V	210-550W	26	1×3	3	42900	40000	1.073
					210-600W	24	1×3	3	43200	40000	1.080
					210-670W	22	1×3	3	44220	40000	1.106
hopeSun 50KTL	4/12	33A×4	1100V	400V	210-550W	26	1×4	4	57200	50000	1.144
					210-600W	24	1×4	4	57600	50000	1.152
					210-670W	22	1×4	4	58960	50000	1.179
hopeSun 80KTL-M	4/14	44A×2+33A×2	1100V	500V	210-550W	26	2×2+2×1	6	85800	80000	1.073
					210-600W	24	2×2+2×1	6	86400	80000	1.080
					210-670W	22	2×2+2×1	6	88440	80000	1.106
hopeSun 100KTL	4/20	55A×4	1100V	500V	210-550W	26	3×4	12	171600	100000	1.716
					210-600W	24	3×4	12	172800	100000	1.728
					210-670W	22	3×4	12	176880	100000	1.769
hopeSun 125KTL-M	4/20	55A×4	1100V	500V	210-550W	26	3×4	12	171600	125000	1.373
					210-600W	24	3×4	12	172800	125000	1.382
					210-670W	22	3×4	12	176880	125000	1.415

5.16 SUNWAYS C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
STT-50KTL-P	6/12	26A×6	1100V	230/400V 3L/N/PE	210-550W	20	1×6	6	66000	50000	1.320
					210-600W	18	1×6	6	64800	50000	1.296
					210-670W	16	1×6	6	64320	50000	1.286
STT-60KTL-P	6/12	26A×6	1100V	230/400V 3L/N/PE	210-550W	24	1×6	6	79200	60000	1.320
					210-600W	22	1×6	6	79200	60000	1.320
					210-670W	19	1×6	6	76380	60000	1.273
STT-80KTL	8/16	26A×8	1100V	230/400V 3L/N/PE	210-550W	24	1×8	8	105600	80000	1.320
					210-600W	22	1×8	8	105600	80000	1.320
					210-670W	19	1×8	8	101840	80000	1.273
STT-100KTL	10/20	26A×10	1100V	230/400V 3L/N/PE	210-550W	24	1×10	10	132000	100000	1.320
					210-600W	22	1×10	10	132000	100000	1.320
					210-670W	19	1×10	10	127300	100000	1.273

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
STT-100KTL-HV	10/20	26A×10	1100V	288/500V 3L/PE	210-550W	24	1×10	10	132000	100000	1.320
					210-600W	22	1×10	10	132000	100000	1.320
					210-670W	19	1×10	10	127300	100000	1.273
STT-110KTL	10/20	26A×10	1100V	230/400V 3L/N/PE	210-550W	26	1×10	10	143000	110000	1.300
					210-600W	24	1×10	10	144000	110000	1.309
					210-670W	21	1×10	10	140700	110000	1.279
STT-125KTL-HV	10/20	26A×10	1100V	288/500V 3L/PE	210-550W	26	1×10	10	143000	125000	1.144
					210-600W	24	1×10	10	144000	125000	1.152
					210-670W	22	1×10	10	147400	125000	1.179

5.17 CHINT C&I Inverter

Inverter Parameters					DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	AC output voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
CPS SCA100KTL-DO	9/18	26A×9	1100V	400V 3L/PE	210-550W	26	1×9	9	128700	100000	1.287
					210-600W	24	1×9	9	129600	100000	1.296
					210-670W	22	1×9	9	132660	100000	1.327
CPS SCA100KTL-DO	1/12	26A×12	1100V	400V 3L/PE	210-550W	26	1×12	12	171600	100000	1.716
					210-600W	24	1×12	12	172800	100000	1.728
					210-670W	22	1×12	12	176880	100000	1.769
CPS SCA136KTL-DO	12/24	26A×12	1100V	540V 3L/PE	210-550W	26	1×12	12	171600	136000	1.262
					210-600W	24	1×12	12	172800	136000	1.271
					210-670W	22	1×12	12	176880	136000	1.301

6. Matching analysis and configuration for Residential String Inverters

Residential photovoltaic projects have a dispersed character and should be installed according to the roof area of the residence and the power usage. For household projects of 12 kW or less, we recommend Trina Solar 410-W and 510-W products, which are low-current products designed based on 210-mm wafers and match all types of inverters perfectly. For residential projects of more than 12 kW, one may choose to use Trina Solar's ultra-high power module and the "One MPPT connected with one string" mode to meet design requirements.

Brands	10KW	12/12.5KW	13KW	15KW	17KW	20KW	22/23KW	25KW	30KW
HUAWEI	/	/	/	1.47	/	1.43	/	/	/
SUNGROW Clean power for all	/	/	/	0.98	1.42	1.43	1.24	1.14	/
GROWATT 古瑞瓦特	/	1.23	1.13	0.98	1.19	1.27	1.30	1.14	1.43
GOODWE YOUR SOLAR ENGINE	/	1.12	/	0.89	1.50	1.43	/	1.14	1.27
锦浪科技 GINLONG	/	/	1.03	0.89	1.02	1.21	1.24	1.14	/
爱士惟 AISWEI	/	1.23	/	0.98	1.50	1.43	1.28	1.18	1.47
KACO new energy.	/	/	/	1.25	1.25	1.21	/	/	/
Fronius	1.34	1.07	/	1.47	1.51	1.32	/	/	/
禾望电气 Hopewind	/	/	/	1.44	1.51	1.32	/	/	/
sunways	/	/	/	/	1.29	1.32	/	1.18	/
CHINT	/	/	/	/	/	1.43	1.28	1.18	/

6.1 HUAWEI Residential Inverter

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
SUN2000-15KTL-M2	2/4	22A×2	1080V	210-550W	20	1+1	2	22000	15000	1.467
				210-600W	18	1+1	2	21600	15000	1.440
				210-670W	16	1+1	2	21440	15000	1.429
SUN2000-17KTL-M2	2/4	22A×2	1080V	210-550W	23	1+1	2	25300	17000	1.488
				210-600W	21	1+1	2	25200	17000	1.482
				210-670W	19	1+1	2	25460	17000	1.498
SUN2000-20KTL-M2	2/4	22A×2	1080V	210-550W	26	1+1	2	28600	20000	1.430
				210-600W	24	1+1	2	28800	20000	1.440
				210-670W	21	1+1	2	28140	20000	1.407

6.2 SUNGROW Residential Inverter

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
SG17RT-20	2/4	25A×2	1100V	210-550W	22	1+1	2	24200	17000	1.424
				210-600W	20	1+1	2	24000	17000	1.412
				210-670W	18	1+1	2	24120	17000	1.419
SG20RT-20	2/4	25A×2	1100V	210-550W	26	1+1	2	28600	20000	1.430
				210-600W	24	1+1	2	28800	20000	1.440
				210-670W	22	1+1	2	29480	20000	1.474
SG23RT-20	2/4	27A×2	1100V	210-550W	26	1+1	2	28600	23000	1.243
				210-600W	24	1+1	2	28800	23000	1.252
				210-670W	22	1+1	2	29480	23000	1.282
SG25RT-20	2/4	27A×2	1100V	210-550W	26	1+1	2	28600	25000	1.144
				210-600W	24	1+1	2	28800	25000	1.152
				210-670W	22	1+1	2	29480	25000	1.179

6.3 GROWATT Residential Inverter

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
MOD 12KTL3-X	2/3	26A+13A	1100V	210-550W	26	1	1	14300	12000	1.192
				210-600W	24	1	1	14400	12000	1.200
				210-670W	22	1	1	14740	12000	1.228
MOD 13KTL3-X	2/3	26A+13A	1100V	210-550W	26	1	1	14300	13000	1.100
				210-600W	24	1	1	14400	13000	1.108
				210-670W	22	1	1	14740	13000	1.134
MOD 15KTL3-X	2/3	26A+13A	1100V	210-550W	26	1	1	14300	15000	0.953
				210-600W	24	1	1	14400	15000	0.960
				210-670W	22	1	1	14740	15000	0.983
MID 17KTL3-X	2/4	27A×2	1100V	210-550W	22	1+1	2	24200	17000	1.424
				210-600W	18	1+1	2	21600	17000	1.271
				210-670W	16	1+1	2	21440	17000	1.261
MID 20KTL3-X	2/4	27A×2	1100V	210-550W	23	1+1	2	25300	20000	1.265
				210-600W	21	1+1	2	25200	20000	1.260
				210-670W	19	1+1	2	25460	20000	1.273

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
MID 22KTL3-X	2/4	27A×2	1100V	210-550W	26	1+1	2	28600	22000	1.300
				210-600W	24	1+1	2	28800	22000	1.309
				210-670W	21	1+1	2	28140	22000	1.279
MID 25KTL3-X	2/5	27A×2+13.5A	1100V	210-550W	26	1+1	2	28600	25000	1.144
				210-600W	24	1+1	2	28800	25000	1.152
				210-670W	22	1+1	2	29480	25000	1.179
MID 30KTL3-X	3/6	26A×3	1100V	210-550W	26	1×3	3	42900	30000	1.430
				210-600W	24	1×3	3	43200	30000	1.440
				210-670W	22	1×3	3	44220	30000	1.474

6.4 GOODWE Residential Inverter

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
GW17KT-DT	2/4	30A×2	1100V	210-550W	23	1+1	2	25300	17000	1.488
				210-600W	21	1+1	2	25200	17000	1.482
				210-670W	19	1+1	2	25460	17000	1.498
GW20KT-DT	2/4	30A×2	1100V	210-550W	26	1+1	2	28600	20000	1.430
				210-600W	24	1+1	2	28800	20000	1.440
				210-670W	22	1+1	2	29480	20000	1.474
GW25KT-DT	2/5	37.5A+30A	1100V	210-550W	26	1+1	2	28600	25000	1.144
				210-600W	24	1+1	2	28800	25000	1.152
				210-670W	22	1+1	2	29480	25000	1.179
GW25KT-MT	3/6	30A×3	1100V	210-550W	19	1+1+1	3	31350	25000	1.254
				210-600W	18	1+1+1	3	32400	25000	1.296
				210-670W	16	1+1+1	3	32160	25000	1.286
GW30KT-MT	3/6	30A×3	1100V	210-550W	23	1+1+1	3	37950	30000	1.265
				210-600W	21	1+1+1	3	37800	30000	1.260
				210-670W	19	1+1+1	3	38190	30000	1.273

6.5 SOLIS Residential Inverter

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
GCI-3P13K-5G	2/3	32A+16A	1000V	210-550W	24	1	1	13200	13000	1.015
				210-600W	22	1	1	13200	13000	1.015
				210-670W	20	1	1	13400	13000	1.031
GCI-3P15K-5G	2/3	32A+16A	1000V	210-550W	24	1	1	13200	15000	0.880
				210-600W	22	1	1	13200	15000	0.880
				210-670W	20	1	1	13400	15000	0.893
GCI-3P17K-5G	2/4	32A×2	1000V	210-550W	18	1+1	2	19800	17000	1.165
				210-600W	17	1+1	2	20400	17000	1.200
				210-670W	15	1+1	2	20100	17000	1.182
GCI-3P20K-5G	2/4	32A×2	1000V	210-550W	22	1+1	2	24200	20000	1.210
				210-600W	20	1+1	2	24000	20000	1.200
				210-670W	18	1+1	2	24120	20000	1.206

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
GCI-3P23K-5G	2/4	32A×2	1100V	210-550W	26	1+1	2	28600	23000	1.243
				210-600W	23	1+1	2	27600	23000	1.200
				210-670W	21	1+1	2	28140	23000	1.223
GCI-3P25K-5G	2/4	32A×2	1100V	210-550W	26	1+1	2	28600	25000	1.144
				210-600W	24	1+1	2	28800	25000	1.152
				210-670W	22	1+1	2	29480	25000	1.179

6.6 KACO Residential Inverter

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
15.0 TL3	2/4	32A×2	1000V	210-550W	17	1+1	2	18700	15000	1.247
				210-600W	16	1+1	2	19200	15000	1.280
				210-670W	14	1+1	2	18760	15000	1.251
20.0 TL3	2/4	32A×2	1000V	210-550W	22	1+1	2	24200	20000	1.210
				210-600W	20	1+1	2	24000	20000	1.200
				210-670W	18	1+1	2	24120	20000	1.206

6.7 FRONIUS Residential Inverter

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
SYMO 10.0-3-M	2/6	27A+16.5A	1000V	210-550W	24	1	1	13200	10000	1.320
				210-600W	22	1	1	13200	10000	1.320
				210-670W	20	1	1	13400	10000	1.340
SYMO 12.5-3-M	2/6	27A+16.5A	1000V	210-550W	24	1	1	13200	12500	1.056
				210-600W	22	1	1	13200	12500	1.056
				210-670W	20	1	1	13400	12500	1.072
SYMO 15.0-3-M	2/6	33A+27A	1000V	210-550W	20	1+1	2	22000	15000	1.467
				210-600W	18	1+1	2	21600	15000	1.440
				210-670W	17	1+1	2	22780	15000	1.519
SYMO 20.0-3-M	2/6	33A+27A	1000V	210-550W	24	1+1	2	26400	20000	1.320
				210-600W	22	1+1	2	26400	20000	1.320
				210-670W	20	1+1	2	26800	20000	1.340

6.8 AISWEI Residential Inverter

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
12K-LT-G2	2/2+1	26A+13A	1100V	210-550W	26	1	1	14300	12000	1.192
				210-600W	24	1	1	14400	12000	1.200
				210-670W	22	1	1	14740	12000	1.228
15K-LT-G2	2/2+1	26A+13A	1100V	210-550W	26	1	1	14300	15000	0.953
				210-600W	24	1	1	14400	15000	0.960
				210-670W	22	1	1	14740	15000	0.983
17K-LT-G2	2/4	26A×2	1100V	210-550W	23	1×2	2	25300	17000	1.488
				210-600W	21	1×2	2	25200	17000	1.482
				210-670W	19	1×2	2	25460	17000	1.498
20K-LT-G2	2/4	26A×2	1100V	210-550W	26	1×2	2	28600	20000	1.430
				210-600W	24	1×2	2	28800	20000	1.440
				210-670W	22	1×2	2	29480	20000	1.474

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
23K-LT-G2	2/4	26A×2	1100V	210-550W	26	1×2	2	28600	23000	1.243
				210-600W	24	1×2	2	28800	23000	1.252
				210-670W	22	1×2	2	29480	23000	1.282
25K-LT-G2	2/4	26A×2	1100V	210-550W	26	1×2	2	28600	25000	1.144
				210-600W	24	1×2	2	28800	25000	1.152
				210-670W	22	1×2	2	29480	25000	1.179

6.9 HOPEWIND Residential Inverter

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
hopeSun 20KTL	2/4	22A×2	1100V	210-550W	26	1×2	2	28600	20000	1.430
				210-600W	24	1×2	2	28800	20000	1.440
				210-670W	22	1×2	2	29480	20000	1.474
hopeSun 22KTL	2/4	22A×2	1100V	210-550W	26	1×2	2	28600	22000	1.300
				210-600W	24	1×2	2	28800	22000	1.309
				210-670W	22	1×2	2	29480	22000	1.340
hopeSun 25KTL	2/4	26A×2	1100V	210-550W	26	1×2	2	28600	25000	1.144
				210-600W	24	1×2	2	28800	25000	1.152
				210-670W	22	1×2	2	29480	25000	1.179

6.10 SUNWAYS Residential Inverter

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
STT-17KTL-P	2/4	30A×2	1100V	210-550W	20	1×2	2	22000	17000	1.294
				210-600W	18	1×2	2	21600	17000	1.271
				210-670W	16	1×2	2	21440	17000	1.261
STT-20KTL-P	2/4	30A×2	1100V	210-550W	24	1×2	2	26400	20000	1.320
				210-600W	22	1×2	2	26400	20000	1.320
				210-670W	19	1×2	2	25460	20000	1.273
STT-25KTL-P	2/4	30A×2	1100V	210-550W	26	1×2	2	28600	25000	1.144
				210-600W	24	1×2	2	28800	25000	1.152
				210-670W	22	1×2	2	29480	25000	1.179

6.11 CHINT Residential Inverter

Inverter Parameters				DC Integration					AC output	
Inverter type	MPPT Nb./ Max inputs	MPPT current	Max system voltage	Module type	Module In series	MPPT config	String inputs	DC power	AC power	Max DC/AC ratio
CPS SCA20KTL	2/2	26A×2	1100V	210-550W	26	1+1	2	28600	20000	1.430
				210-600W	24	1+1	2	28800	20000	1.440
				210-670W	22	1+1	2	29480	20000	1.474
CPS SCA23KTL	2/2	26A×2	1100V	210-550W	26	1+1	2	28600	23000	1.243
				210-600W	24	1+1	2	28800	23000	1.252
				210-670W	22	1+1	2	29480	23000	1.282
CPS SCA25KTL	2/2	26A×2	1100V	210-550W	26	1+1	2	28600	25000	1.144
				210-600W	24	1+1	2	28800	25000	1.152
				210-670W	22	1+1	2	29480	25000	1.179

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