

# Vertex S+

## MONOFACIAL DUAL GLASS MONOCRYSTALLINE MODULE

PRODUCT: TSM-NEG18R.28

PRODUCT RANGE: 475-505W

### 505W

MAXIMUM POWER OUTPUT

### 0~+5W

POSITIVE POWER TOLERANCE

### 22.7%

MAXIMUM EFFICIENCY



#### High customer value

- Lower LCOE (levelized cost of energy), reduced BOS (balance of system) cost, shorter payback time
- Designed for compatibility with existing mainstream system components
- High module power, high string power and low voltage design



#### High power up to 505W

- Up to 22.7% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection



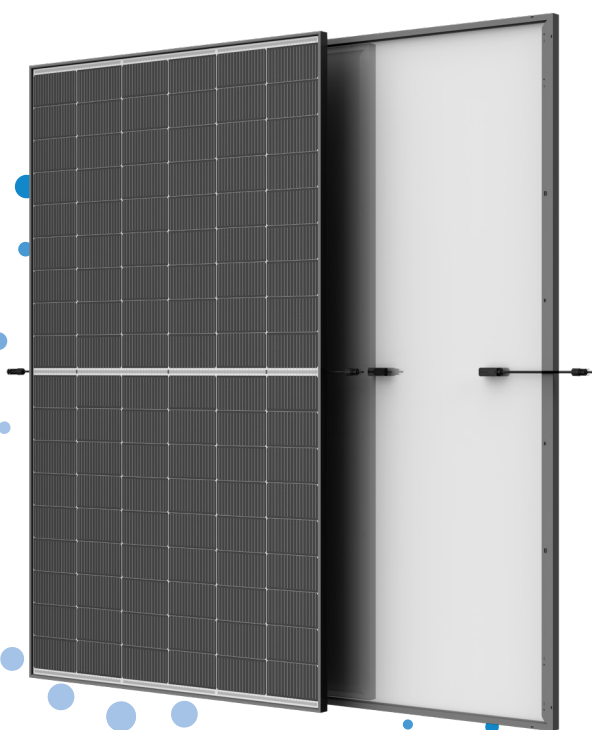
#### Dual-glass design, high reliability

- Less prone to micro-cracks and scratches on the back during installation
- Applicable in harsh environments such as salt, ammonia, sand, high temperature and high humidity areas with excellent fire rating, weather resistance, salt spray, sand dust, ammonia performance
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load
- Easy to handle and install on roofs with excellent size and light weight

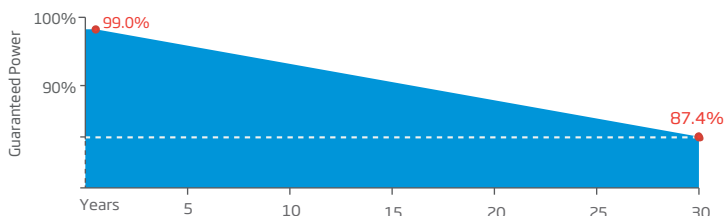


#### Ultra-low degradation, longer warranty, higher output

- Extremely low 1% first year degradation and 0.4% annual power attenuation
- Up to 15 years product warranty and 30 years power warranty
- Lower temperature coefficient (-0.29%/°C) and operating temperature



#### Trina Solar's Vertex Monofacial Dual Glass Performance Warranty



#### Comprehensive Products and System Certificates



IEC61215/IEC61730/IEC61701/IEC62716

ISO 9001: Quality Management System

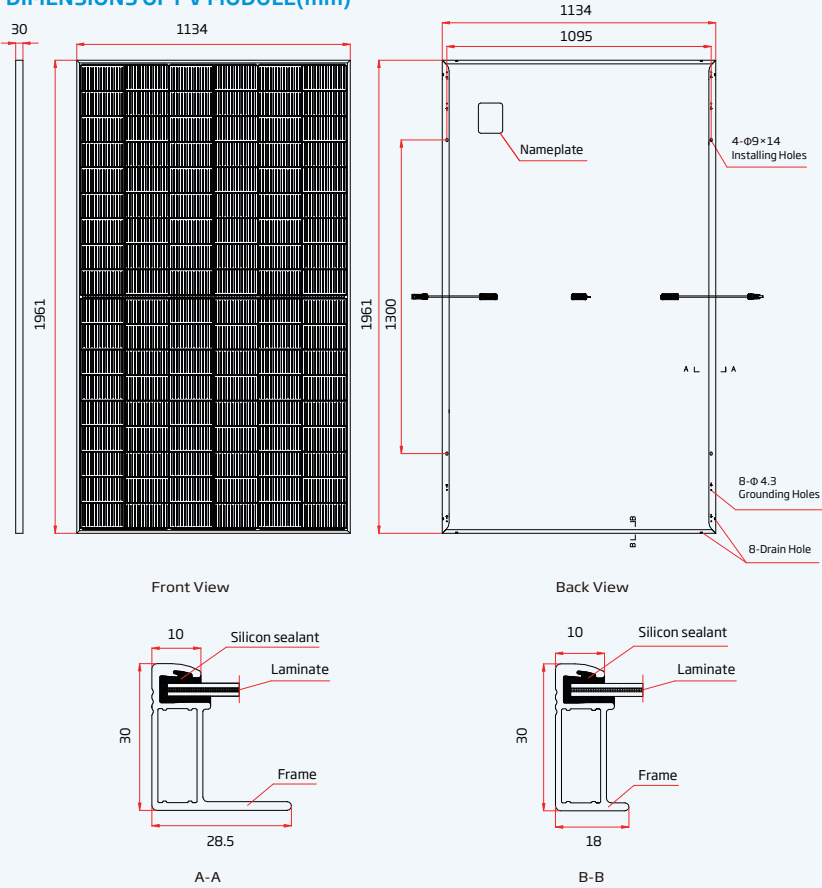
ISO 14001: Environmental Management System

ISO14064: Greenhouse Gases Emissions Verification

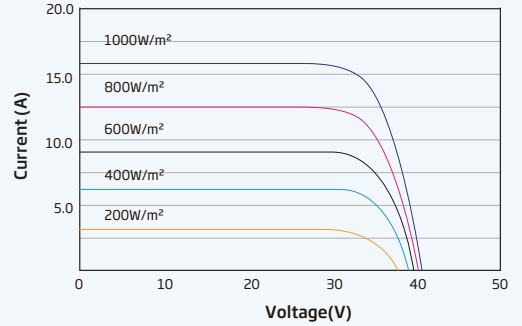
ISO45001: Occupational Health and Safety Management System



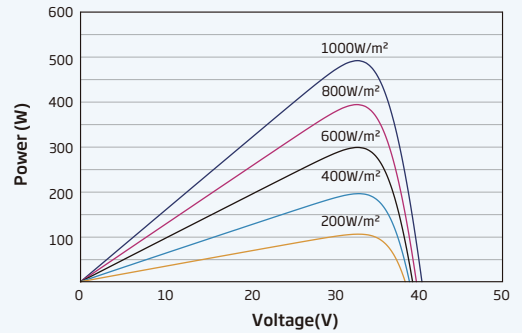
**DIMENSIONS OF PV MODULE(mm)**



**I-V CURVES OF PV MODULE (490W)**



**P-V CURVES OF PV MODULE (490W)**



**ELECTRICAL DATA (STC)**

Peak Power Watts-P <sub>MAX</sub> (Wp)*	475	480	485	490	495	500	505
Power Tolerance-P <sub>MAX</sub> (W)	0 ~ +5						
Maximum Power Voltage-V <sub>MPP</sub> (V)	32.3	32.5	32.7	32.9	33.1	33.3	33.5
Maximum Power Current-I <sub>MPP</sub> (A)	14.72	14.77	14.84	14.91	14.97	15.03	15.09
Open Circuit Voltage-V <sub>OC</sub> (V)	39.0	39.2	39.4	39.6	39.8	40.1	40.3
Short Circuit Current-I <sub>SC</sub> (A)	15.68	15.72	15.76	15.80	15.83	15.86	15.89
Module Efficiency η <sub>m</sub> (%)	21.4	21.6	21.8	22.0	22.3	22.5	22.7

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5. \*Measuring tolerance: ±3%.

**ELECTRICAL DATA (NOCT)**

Maximum Power-P <sub>MAX</sub> (Wp)	363	367	371	375	378	382	386
Maximum Power Voltage-V <sub>MPP</sub> (V)	30.4	30.6	30.8	31.0	31.3	31.5	31.8
Maximum Power Current-I <sub>MPP</sub> (A)	11.94	11.98	12.02	12.06	12.08	12.11	12.15
Open Circuit Voltage-V <sub>OC</sub> (V)	36.9	37.2	37.4	37.6	37.7	38.0	38.3
Short Circuit Current-I <sub>SC</sub> (A)	12.64	12.67	12.70	12.74	12.76	12.78	12.81

NOCT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s.

**MECHANICAL DATA**

Solar Cells	Monocrystalline
No. of cells	108 cells
Module Dimensions	1961×1134×30mm (77.20×44.65×1.18 inches)
Weight	23.5kg (51.8 lb)
Front Glass	1.6mm High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	POE/EVA
Back Glass	1.6mm (0.06 inches), Heat Strengthened Glass
Frame	30mm(0.06 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm <sup>2</sup> (0.006 inches <sup>2</sup> ) Portrait: 280/350 mm(11.02/13.78 inches) Length can be customized
Connector	MC4 EVO2 / TS4 Plus / TS4*

\*Please refer to regional datasheet for specified connector.

**TEMPERATURE RATINGS**

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of P <sub>MAX</sub>	-0.29%/°C
Temperature Coefficient of V <sub>OC</sub>	-0.24%/°C
Temperature Coefficient of I <sub>SC</sub>	0.04%/°C

**MAXIMUM RATINGS**

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	30A

**WARRANTY**

- 15 year Product Workmanship Warranty
- 30 year Power Warranty
- 1% first year degradation
- 0.4% Annual Power Attenuation

(Please refer to product warranty for details)

**PACKAGING CONFIGURATION**

- Modules per box: 36 pieces
- Modules per 40' container: 864 pieces

# HYBRID SERIES

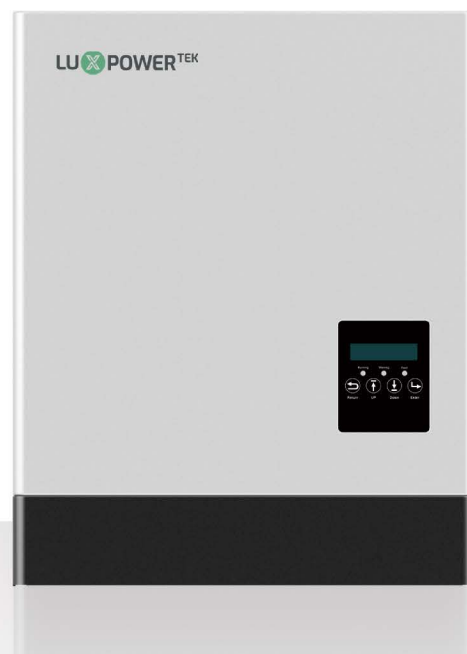
## Single Phase

# LXP 3-6k

LU X POWER<sup>TEK</sup>



- **Single phase/Unbalanced 3-Phase**
- **Support up to 10pcs in parallel**
- **Intelligent charge features**
  - Weather forecast compensation
  - Update electricity price automatically
  - Economize charging/discharging schedule automatically
- **Unique monitoring platform**
  - Free APPs on smartphone (Android/iOS) & PC (Web)
- **Integrated UPS module**
  - On/off grid seamless switching under 20ms
- **Wide battery compatible list**
- **Plug & Play (AC and PV port)**



## SpecifiCation

INPUT (PV DC)	LXP 3000W	LXP 3600W	LXP 4000W	LXP 4600W	LXP 5000W	LXP 6000W
Max. PV array power(W)	6600	7000	7000	8000	8000	8000
Rated PV input voltage(V)	360					
Number of independent MPPT inputs	2					
PV input voltage range(V)	100~550					
MPPT voltage range(V)	120~500					
Start-up voltage(V)	140					
Max. PV input current per MPPT(A)	13					
Max. PV short-circuit current input per MPPT(A)	20					
<b>Battery</b>						
Compatible battery type	Lithium-ion/Lead-Acid					
Rated battery voltage(V)	48					
Battery voltage range(V)	48-60					
Max. charging voltage(V)	60					
Max. charging/discharging current(A)	66				80	
Max. charging/discharging power(W)	3600				4000	
Force wake up battery from PV function	YES					
<b>Grid</b>						
Rated AC voltage(V)	230					
Rated AC frequency(HZ)	50/60					
Rated AC output current(A)	13	15.6	17.4	20	21.7	26
Rated AC output power(W)	3000	3600	4000	4600	5000	6000
Max. AC input current(A)	31.3	31.3	31.3	34.7	34.7	34.7
Max. AC input power(W)	7200				8000	
PF	0.99(Adjustable from 0.8 leading to 0.8 lagging)					
THDI	<3%					
Rated AC current of BYPASS relays(A)	40					
<b>UPS</b>						
Rated output power with Solar(W)	3000	3600	4000	4600	5000	6000
Rated output power without Solar(W)	3000	3600	4000	4000	4000	4000
Rated output voltage(V)	230					
Rated output current(A)	13	15.6	17.4	17.4	17.4	17.4
Rated output frequency(Hz)	50/60					
Surge power, duration	4500W, 30S					
Switching time(UPS)	20ms					
Wave form	Sine wave					
THDV	<5%					
<b>Efficiency</b>						
Max. MPPT efficiency	99.0%					
Max. efficiency	97.3%					
EU efficiency	97.0%					
Max. charging efficiency	94.5%					
Max. discharging efficiency	94.5%					
<b>Protection</b>						
Over current/voltage protection	YES					
Anti-islanding protection	YES					
AC Short-circuit current protection	YES					
Leakage current protection	YES					
Ground fault monitoring	YES					
Grid monitoring	YES					
DC switch	YES					
DC surge protection Type III	YES					
AC surge protection Type III	YES					
<b>General</b>						
Dimensions(W*H*D)	455*565*181mm/17.9*22.2*7.1inch					
Weight	20kg/44.1lbs					
Ingress protection rating	IP65					
Operating environment temperature range	-25~60°C					
Storage temperature range	-40~65°C					
Relative humidity	0~95%					
Display & Communication interface	LCD, RS485/Wi-Fi/CAN					
Warranty	5 years					
Cooling method	Natural					
Topology	Transformer-less					
Altitude	2000m					
Noise emission(typical)	<25dB					
<b>Standards &amp; Certification</b>						
IEC 62109-1/2, IEC 62040, IEC 62477, EN 61000, IEC 60068, EN 62920, AS4777.2, NRS 097, EN 50549, RD1699, RD413, RD647, UNE 217001, NT5 TYPE A, CEIO-21, CEIO-16, VDE-AR-N 4105, UTE C15-712-1/XP C15-712-3/VFR 2019, G98, G99						

## TriP2-LB-3P 5-20K (Trifase)

- Supporta carichi trifase sbilanciati per una maggiore compatibilità con applicazioni miste residenziali o commerciali
- Max. 3 MPPT con 3 stringhe, ingresso FV massimo: 30 kW
- Compatibile con sistemi a batteria a bassa tensione da 48 V
- Supporta il controllo indipendente dell'esportazione in rete per ogni fase
- Gestione dei tempi di utilizzo, 8 fasce orarie per carica e scarica
- Supporta fino a 10 unità in parallelo per funzionamento on-grid e off-grid
- Porta GEN dedicata per
  - Controllo automatico GEN
  - Funzione carico intelligente
  - Funzione di accoppiamento AC



Bassa tensione



Modello	TriP2-LB-3P 5K	TriP2-LB-3P 6K	TriP2-LB-3P 8K	TriP2-LB-3P 10K	TriP2-LB-3P 12K	TriP2-LB-3P 15K	TriP2-LB-3P 20K	
<b>Ingresso (PV DC)</b>								
Potenza massima di ingresso PV (W)	7500	9000	12000	15000	18000	22500	30000	
Tensione di ingresso nominale PV (V)	690							
Numero di ingressi MPPT indipendenti	3 / (1:1:1)							
Tensione massima di ingresso PV (V)	1000							
Intervallo di tensione MPPT (V)	200 ~ 900							
Tensione di avvio (V)	100							
Corrente massima di ingresso PV per MPPT (A)	20 / 20 / 20							
Corrente massima di cortocircuito di ingresso PV per MPPT (A)	25 / 25 / 25							
<b>Batteria</b>								
Tipo di batteria compatibile	Litio-Ione / PbAcido							
Tensione nominale della batteria (V)	40 - 60							
Corrente massima di carica / scarica (A)	125	150	200	220	250	250	250	
Potenza massima di carica / scarica (W)	5000	6000	8000	10000	12000	12000	12000	
Strategia di carica per batterie Li-ion	Auto-adattamento al BMS							
<b>Rete</b>								
Tensione nominale AC (V)	3L / N / PE, 230 / 400Vac							
Frequenza nominale AC (Hz)	50 / 60							
Potenza nominale di uscita AC (W)	5000	6000	8000	10000	12000	15000	20000	
Corrente nominale di uscita AC (A)	7.20	8.70	11.60	14.50	17.40	21.70	29.00	
Corrente massima di ingresso AC (A)	9	10.9	14.5	18.1	21.8	27.1	36.25	
Fattore di potenza (FP)	0,99 (Regolabile da 0,8 in anticipo a 0,8 in ritardo)							
Distorsione armonica totale (THDI)	< 3%							
Corrente continua massima di passaggio AC (A)	30					50		70
<b>GEN</b>								
Tensione nominale del generatore (V)	3L / N / PE, 230 / 400Vac							
Frequenza nominale del generatore (Hz)	50 / 60							
Corrente di ingresso nominale del generatore (A)	30							
Potenza di ingresso nominale del generatore (W)	20700							
<b>UPS</b>								
Potenza di uscita nominale (W)	5000	6000	8000	10000	12000	15000(FV+Batteria)	20000(FV+Batteria)	
Tensione di uscita nominale (V)	3L / N / PE, 230 / 400Vac							
Corrente di uscita nominale (A)	7.20	8.70	11.60	14.50	17.40	21.70	29.00	
Frequenza di uscita nominale (Hz)	50 / 60							
Potenza di picco, durata	1,5 × potenza nominale per 5 min							
Tempo di commutazione	10ms							
Forma d'onda	Onda sinusoidale							
THDV	< 3%							
<b>Efficienza</b>								
Massima efficienza	97.7%							
Massima efficienza di carica / scarica	94.0%							
<b>Protezione</b>								
Protezione contro la polarità inversa PV	Sì							
Protezione contro sovraccarico / sovratensione	Sì							
Protezione anti-isola	Sì							
Protezione contro cortocircuito AC	Sì							
Protezione contro corrente di fuga	Sì							
Monitoraggio della rete	Sì							
Interruttore DC	Sì							
Protezione contro l'ingresso	Sì							
Protezione contro le sovratensioni DC	Tipo III							
Protezione contro le sovratensioni AC	Tipo III							
<b>Generale</b>								
Dimensioni (L × A × P)	480 × 703 × 258mm / 18.9 × 27.7 × 10.2 in							
Peso	53 kg / 116.8 lbs							
Classe di protezione	IP66							
Intervallo di temperatura ambiente di funzionamento (°C)	-25~+60°C, Riduzione di potenza >45°C							
Intervallo di temperatura di stoccaggio (°C)	-25 ~ +60							
Umidità relativa	0 ~ 100%							
Display & Interfaccia di comunicazione	Schermo a colori touch, RS485 / Wifi / CAN							
Garanzia	5 / 10 anni							
Metodo di raffreddamento	Raffreddamento intelligente							
Topologia	Senza trasformatore							
Altitudine massima di funzionamento (m)	2000							
Emissione acustica (dB)	50							
<b>Norme e certificazioni</b>								

# PSHIELD



## Features



IP65 enclosure & Built-in heating system, designed for outdoor use & extreme weather.



1C rate continuous charge/discharge



Second level protection, robust applications



Parallel up to 32 modules



Ultra safe LFP material, 10 year warranty.



DC Breaker built-in



Handy monitor & flexible remote upgrade.



Active balancing charging, low self consumption



Smart BMS management for longer lifespan

Model	PSHIELD
Cell Type	LFP
Rated Energy	5.12kWh
Rated Capacity	100Ah
Rated Voltage	51.2V
Charge Voltage	57.2V
Max. Charge / Discharge Current	100A
Discharge Peak Current	105A / 15s, 150A / 0.5s
Parallel	Up to 32 units parallelable w/o extra device needed, slave battery drops offline or come back alive does not affect system running
IP Level	IP65
Dimension (W × H × D)	500 × 650 × 167 mm / 19.7 × 25.6 × 6.6 in
Weight	60 kg / 132.3 lbs
Communication	CAN / RS485
Humidity	5% ~ 85%RH (No condensation)
Work Temperature	-20°C~ +55°C, heating system built-in
Storage Temperature	-10°C~ +35°C
Remote Maintenance	Handy monitor & flexible remote upgrade, Original firmware backup to prevent upgrade failure
Warranty *	10 years, 6000 cycles
Certification	CE; UN38.3; IEC62619
Protection	Over charge/discharge/current/voltage/temperature protection Short circuit protection, Reverse connection protection Charge balance, Low SOC protection

@25°C, 90% DOD. 0.5C testing condition