

## Inverter Charger

# Tyrann

2kW / 3kW / 5kW / 8kW

Parallel and three-phase up to 9 units (2~72kW)  
 Feeding energy back into grid  
 Programmable smart port  
 For off-grid, ESS & Self-consumption applications  
 AGS, power assist & power control

Tyrann (2kW - 8kW model) is a multifunctional inverter charger, with feeding energy back into grid capability. Tyrann boasts richer functionalities to meet more applications' need. In addition to off-grid application, Tyrann, plus an external current sensor, can optimize the self-consumption without meter. With E4 LCD Monitor, Tyrann is ideally suited for complex ESS applications for various countries.

More importantly, Tyrann is equipped with a smart port which can be programmed as a generator input port to realize two AC inputs for the system, or as an AC output to power normal loads to realize smart load management during power outages.

- For off-grid, ESS applications
- Suitable for AC Coupled PV System, DC Coupled PV System and the combination of both
- Parallel and three-phase operation up to 9 units (72kW)
- With external current sensor to optimize self-consumption
- Realize ESS functionality via E4 LCD Monitor
- Time of Use: support scheduling multiple periods for battery charging and discharging
- Transformer-based, easily withstand the initial surge current from various heavy loads
- One programmable smart port for generator input or powering normal loads
- Feeding energy back into grid
- Compatible with SP600-120 to achieve a higher efficiency DC Coupled PV system
- Compatible with mainstream lithium battery brands and majority of generators
- Built-in with two relays for generator automatic start and stop (AGS)
- Power Assist and Power Control to maximize the use of limited AC power and prevent overload on the AC source
- Oms UPS transfer switch to protect mission critical loads
- Local monitoring and control via E4 LCD Monitor
- Remote monitoring and control via NOVA APP or Web



## Inverter Charger

# Tyrann

10kW / 15kW

Two AC inputs & Two AC outputs  
ESS Functionality  
Parallel and three-phase capability (10kW-135kW)  
Compatible with majority of generators  
Power Assist & Power Control

Tyrann is an inverter charger similar to Kinerger Pro, yet it features two independent AC inputs for connecting the grid and a generator, or two generators. It can automatically select the active source or the user-preset prioritized AC source based on the system demand. When peak power is required for a limited period, Tyrann will discharge the battery immediately to compensate the insufficient part of the limited AC source, safeguarding an uninterruptible power supply for loads to the maximum extent.

Worth to mention, that Tyrann boasts ESS functionality, supporting energy feeding back into the grid. Its single-machine maximum power is up to 15kW, featuring a stronger surge capacity to carry inductive loads with high initial current. In addition, it works well with TBB latest SP600-120 solar charge controller which supports higher open circuit voltage. They are the perfect couple in composing a DC Coupled PV system with higher efficiency.

- Two AC inputs for grid and generator (or for two generators)
- Two AC outputs: one usual uninterruptible output, one programmable output for load management
- Support feeding energy back into the grid
- Support ESS functionality via E4 LCD Monitor
- Support AC Coupled PV system, DC Coupled PV system or the combination of both
- Compatible with SP600-120 to achieve a higher efficiency DC Coupled PV system
- Transformer based, easily withstand the initial surge current from various inductive loads
- Parallel and three phase operation up to 9 units (135kW)
- 0ms UPS class transfer time to protect mission-critical loads
- Support system wake-up when AC source or PV is regained, to effectively prevent the system from becoming deadlock due to low battery voltage/SoC, to realize unattended function
- Support two independent CAN Buses for flexible system communication, one for parallel connection, the other for monitoring communication
- Power Assist and Power Control to maximize the use of limited AC power and prevent overload on the AC source
- Minimize the impact of loads on batteries when the grid is available
- Built-in three programmable relays, supporting automatic generator start and stop (AGS)
- More flexible in system application
- Remote monitoring and control via NOVA APP or Web

Model No.	Tyrann 2.0M	Tyrann 3.0M	Tyrann 5.0M	Tyrann 2.0S	Tyrann 3.0S	Tyrann 5.0S	Tyrann 8.0S
Power Assist	Yes						
Feedback into Grid	Yes						
AC input voltage range(VAC)	175~265						
AC input Frequency range(Hz)	45~65						
AC input Current (transfer switch) (A)	32		50		32		50

## Inverter

Nominal battery voltage (V)	24			48			
Input voltage range (V)	21~34			42~68			
AC output voltage(VAC)	220/230/240 ± 2%						
AC output Frequency(Hz)	50/60 ± 0.1%						
Harmonic distortion	< 2%						
Load Power factor	1.0						
Cont. output power at 25°C (VA)	2000	3000	5000	2000	3000	5000	8000
Cont. output power at 25°C (W)	1600	2500	4500	1600	2500	4000	6500
Output power (30min) at 25°C (W)	2000	3000	5000	2000	3000	5000	8000
Peak power (W)	6000	9000	15000	6000	9000	15000	24000
Cont. output power at 40°C (W)	1500	2200	3600	1500	2200	3700	5600
Maximum efficiency	94%	94%	94%	95%	95%	96%	96%
Zero load power (W)	11	14	23	11	14	18	26

## Charger

Charge voltage 'absorption' (VDC)	28.8			57.6			
Charge voltage 'float' (VDC)	27.6			55.2			
Battery types	AGM / GEL / OPzV / Lead-Carbon / Flooded / Traction / Lithium						
Max AC charge current (A)	50	80	150	25	40	70	
Temperature compensation	Yes						

## General Data

AC Out1 Current (A)	32		50		32		50
Smart Port Current (A)	32		50		32		50
Transfer time	0ms (< 15ms in Weak AC source Mode)						
Remote on-off	Yes						
Programmable relay	2x						
Protection	a) output short circuit, b) overload, c) battery voltage too high, d) battery voltage too low, e) temperature too high, f) input voltage out of range, g) input voltage ripple too high, h) Fan block						
ComSync communication port	For parallel and three phase operation						
ComMON communication port	For remote monitoring and system integration						
Operating temperature range	-20°C~65°C						
Relative humidity in operation	95% without condensation						
Altitude (m)	2000						

## Mechanical Data

Dimension (mm) (max)	499*272*144		620*320*164		499*272*144		570*310*154		620*320*164	
Net Weight (kg)	16	19	32	16	19	30				
Cooling	Forced fan									
Protection category	IP21									

## Standard

Safety	EN-IEC 62477-1, EN-IEC 62109-1, EN-IEC 62109-2, EN-IEC 62040-1									
EMC	EN-IEC 61000-6-1, EN-IEC 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12									
Grid Regulation	VDE-AR-N 4105*, NRS 097-2-1:2017*, AS/NZS 4777.2:2020*, NTS 2.1 (A)*, RD 1699*									

\* Coming soon

Model No.	Tyrann 10.0S	Tyrann 15.0S
Product topology	Transformer based	
Power Assist	Yes	
Feedback into Grid	Yes	
AC input range	175~265VAC / 45Hz~55Hz@50Hz (normal), 55Hz~65Hz@60Hz (normal)	
AC input Current (transfer switch) (A)	2x100	

## Inverter

Nominal battery voltage / Input voltage (VDC)	48 / 42~68	
AC output voltage(VAC) / Frequency(Hz)	220/230/240VAC± 2%, 50/60Hz ± 0.1%	
Harmonic distortion	<2%	
Load Power factor	1.0	
Cont. output power at 25°C (VA)	10000	15000
Peak power (30min) (W)	10000	15000
Cont. output power at 25°C (W)	8000	13000
Cont. output power at 40°C (W)	6500	11000
Cont. output power at 65°C (W)	4500	7200
Peak power(W)	30000	45000
Surge	300%	
Maximum efficiency	96%	
Zero load power (W)	40	60

## Charger

Charge voltage 'absorption' (V) / 'float' (V)	57.6 / 55.2	
Battery types	AGM / GEL / OPzV / Lead-Carbon / Flooded / Traction / Lithium	
Max AC charge current (A)	140	200
Temperature compensation	Yes	

## General data

Main Output (AC Out1) Current (A)	100	100
Auxiliary Output (AC Out2) Current (A)	50	50
Transfer time	0ms (<15ms in Weak AC source Mode)	
Remote on-off	Yes	
Programmable relay	3x	
Protection	a) output short circuit; b) overload; c) battery voltage too high; d) battery voltage too low; e) temperature too high; f) input voltage out of range; g) input voltage ripple too high; h) Fan block	
ComSync communication port	For parallel and three phase operation	
ComMON communication port	For remote monitoring and system integration	
Operating temperature range	-40°C~+65°C	
Relative humidity in operation	95% without condensation	
Altitude (m)	3500m	

## Mechanical Data

Battery connection	Bolts M8*2*2	
AC connection	Bolts M6	
Dimension (mm) (max)	670*498*292	
Net Weight (kg)	60	80
Cooling	Forced fan	
Protection Category	IP21	

## Standards

Safety	EN-IEC 62477-1, EN-IEC 62109-1, EN-IEC 62109-2, EN-IEC 62040-1	
EMC	EN-IEC 61000-6-1, EN-IEC 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12	
Grid Regulation	NRS 097-2-1:2017*, AS/NZS 4777.2:2020*, VDE-AR-N 4105 *, NTS 2.1 (A)*, RD 1699*	

\* Coming soon

# For Off-Grid and ESS Applications

T B B R E N E W A B L E



As a transformer-based inverter charger with AGS function and excellent compatibility with generators and lithium batteries, Tyrann is ideal for off-grid application, flexible to compose DC coupled PV system, AC Coupled PV system as well as the combination of both to meet various scenarios' need. With E4 LCD Monitor, Tyrann can realize complex ESS functionality.

## Optimize Self-consumption

Tyrann can maximize self-consumption with solar and battery to cut down on high electricity expense. Connect some normal loads to the AC input of Tyrann, the solar energy will be used to power loads and charge batteries to a certain level. When there is any surplus, it can be fed back to power normal loads on the AC input, to maximize self-consumption and greatly reduce the system investment and save electricity bills.

## Retrofit Existing Grid-tie System

When the subsidy of feeding energy into grid is greatly reduced or canceled, Tyrann can be applied to retrofitting the existing grid-tie system into energy storage system to store solar energy into the battery for local use rather than feeding back into the grid.

## Peak Shaving

When there is large peak-to-valley price difference, Tyrann can charge batteries with grid electricity during low price periods and discharge batteries to power loads during high price periods. If there is still any surplus and the subsidy is high, it can be fed back into grid, to make a profit and greatly reduce electricity bills.

## Self-consumption and Backup Power

The reserved battery SoC is configurable, depending on the grid failure is rare or common, to realize most efficient self-consumption and energy management & dispatch.

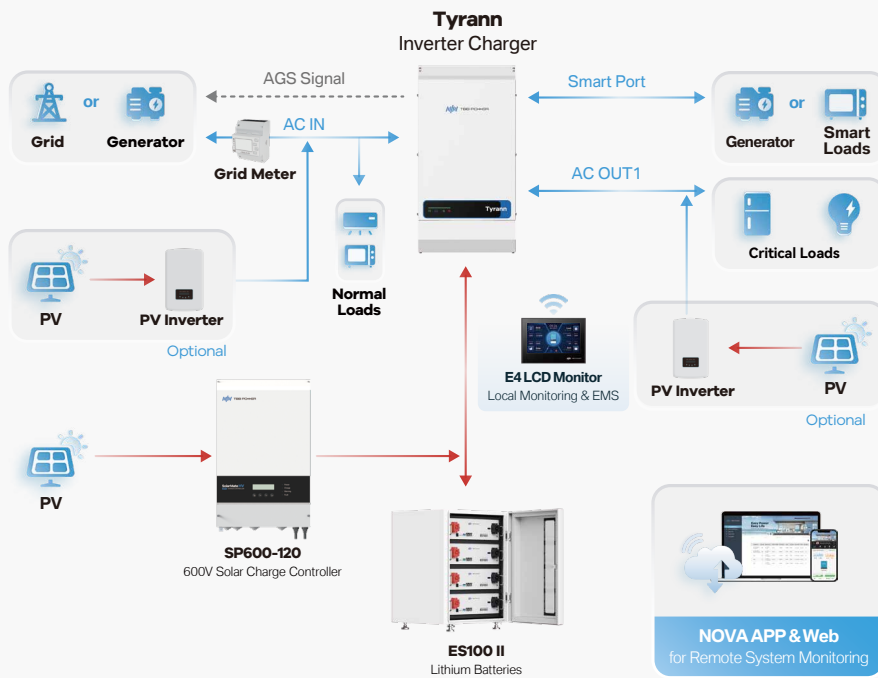
TBB RENEWABLE

## AC+DC Coupled PV System

2kW-72kW

For Residential & Commercial

with ESS Functionality



### Complete Solution

#### Inverter Charger:

2kW-24kW Single Phase  
6kW-72kW Three Phase

#### PV Inverter:

2kW-24kW Single Phase  
6kW-72kW Three Phase

#### MPPT Charger:

up to 105kW

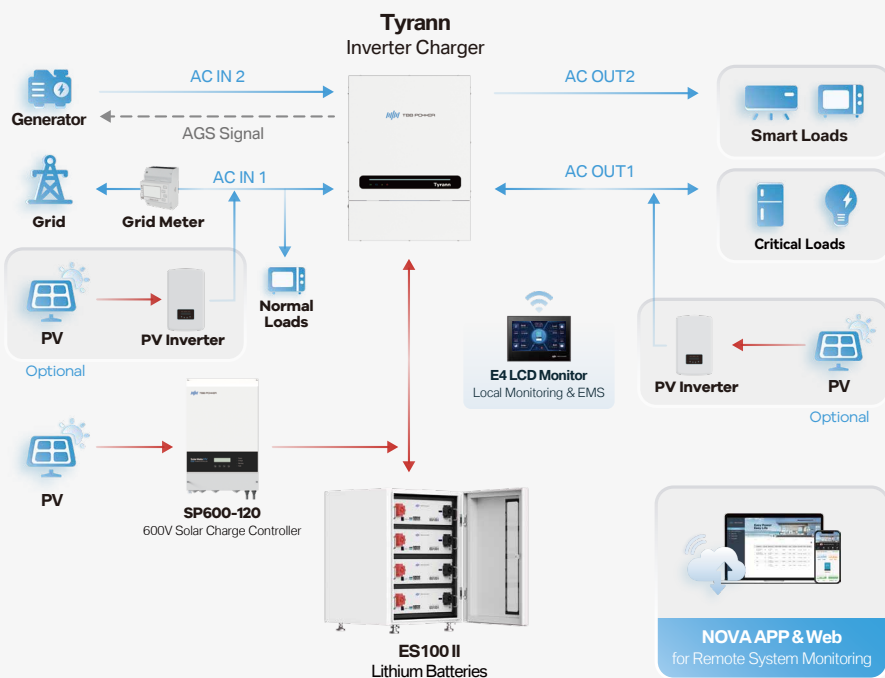
Ideal for residential and small commercial off-grid and ESS applications, ranging from 2kW to 72kW. Tyrann (2kW - 8kW model) is equipped with a smart port that can be programmed as a generator input to realize two AC inputs, or as an AC output for load management. Additionally, it can work with TBB 600V MPPT to achieve higher efficiency DC Coupling.

## AC+DC Coupled PV System

10kW-135kW

For Residential & Commercial

with ESS Functionality



### Complete Solution

#### Inverter Charger:

10kW-45kW Single Phase  
30kW-135kW Three Phase

#### PV Inverter:

10kW-45kW Single Phase  
30kW-135kW Three Phase

#### MPPT Charger:

up to 105kW

Ideal for residential and commercial off-grid and ESS applications, ranging from 10kW to 135kW. A single Tyrann unit has a maximum power capacity of up to 15kW. Additionally, Tyrann (10kW / 15kW model) is equipped with two AC inputs for connecting grid and generator or two generators. It can automatically select the active source or the prioritized AC source.