TBB POWER

Australia

OFF-GRID SOLUTIONS

Complete Power Solution Provider





TBB POWER

Innovation-Driven Energy Solutions Provider

Founded in 2007 and headquartered in Xiamen, TBB POWER specializes in comprehensive off-grid solutions. With 19 years of industry experience, we deliver reliable power systems to clients in over 50 countries worldwide. Committed to advancing self-sufficient, decentralized renewable energy solutions through strategic partnerships worldwide.

Complete One-Stop Power Solution Provider

Power generation, Power conversion, Energy storage, System monitoring & cloud platforms and System accessories.

- **700,000+ Installations Worldwide**
- **200+ Engineers**
- **200+ Patents & Copyrights**
- **Certifications: ISO9001, CE, UL**

Off Grid Solutions

For Remote & Challenging Environments

TBB POWER's off-grid systems deliver reliable electricity where traditional grid power is unavailable or unstable. Our innovative solution combines high-efficiency and reliable off-grid inverter, long cycle life lithium battery system, and smart monitoring & cloud control to create self-sustaining energy ecosystems.



Key Applications

- **Residential (Household)**
  - Vacation Homes / Remote Houses / Lodges – 24/7 reliable power in off-grid locations

- **Small Commercial**
  - Remote Schools & Clinics – Uninterrupted power for education and healthcare
  - Off-grid Mining Sites – Rugged power for heavy equipment
  - Agricultural Operations – Reliable energy for irrigation and rural farm equipment

TBB's Technological Edge

- **Multi-Source Integration**: solar, battery and generator input
- **Excellent surge capacity** for motorized equipment startups
- **Smart load management** prioritizes essential loads
- **<4ms** on/off-grid switching
- **Flexible system expansion** and AC/DC Coupling capability
- **Intelligent energy management** and system monitoring

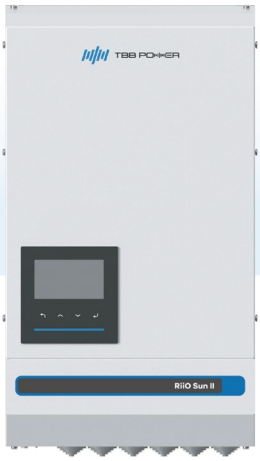


RiiO Sun II

Off-Grid Inverter

Single Phase | 230Vac

3kVA / 5kVA / 6kVA / 8kVA



RiiO Sun II is a robust, transformer-based inverter purpose-built for off-grid applications. It integrates a pure sine wave inverter, battery charger, MPPT solar charge controller, and a fast 4ms transfer switch. Designed with high start-up surge capability, it easily powers the most demanding appliances during off-grid operation.

- Transformer-based
- Parallel capability
- Dual MPPT trackers
- Programmable smart port

Superior Reliability

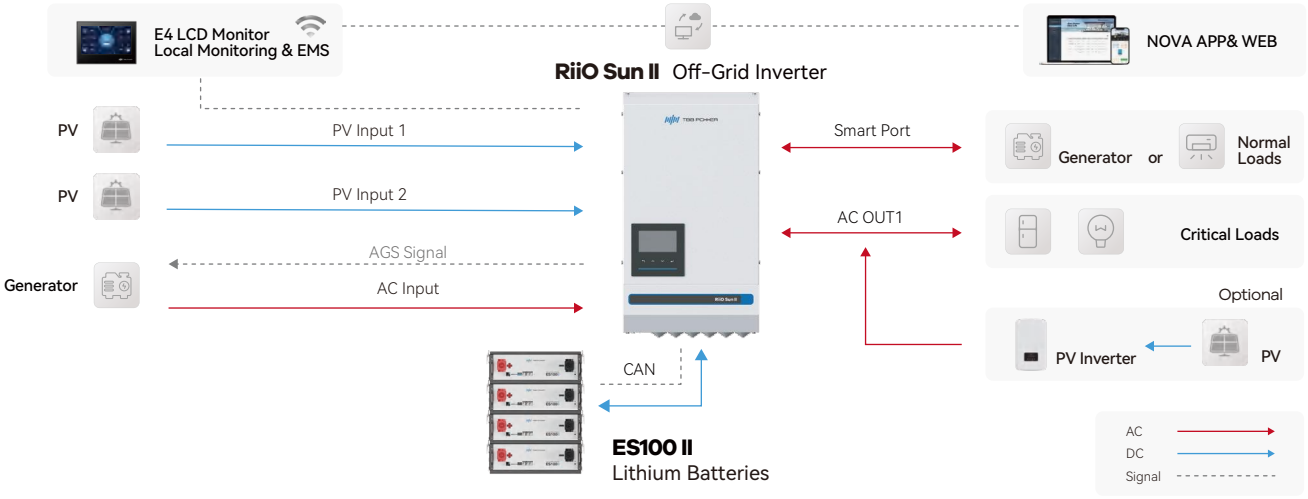
- Transformer-based design with excellent surge capability
- 4ms on/off-grid switching
- Maximize solar utilization and minimize energy waste
- Low idle power
- ECO Mode available

Enhanced Flexibility

- Robust for off-grid applications
- Parallel & three-phase up to 9 units, 72kVA
- Dual MPPT & smart port for GEN/load (5/6/8kVA)
- AC/DC coupling, AGS, Power Control & Power Assist
- Wide compatibility with lithium batteries & generators
- Battery-free operation available

Easy O&M

- All-in-one design for easy installation
- Auto restart on PV or AC recovery
- Bluetooth for local setup/monitoring (NOVA App)
- Remote monitoring and control via NOVA Web & App



Model	RiiO Sun II 3KVA-S	RiiO Sun II 5KVA-S	RiiO Sun II 6KVA-S	RiiO Sun II 8KVA-S Pro
Power Assist	Yes			
AC Input Range	175~265 VAC / 45~65Hz			
AC Input Current (Transfer Switch) (A)	32	50	50	50
Inverter				
Nominal Battery Voltage / Input Voltage (V)	48 / 42~68			
AC Output Voltage (VAC)	220/230/240 ± 2%			
AC Output Frequency (Hz)	50/60 ± 0.1%			
Harmonic Distortion	<2%			
Cont. Output Power at 25°C (VA)	3000	5000	6000	8000
Max Output Power at 25°C (W)	3000	5000	6000	8000
Peak Power (W)	6000	10000	12000	16000
Maximum Efficiency	93%	94%	94%	95%
Zero Load Power (W)	17	22	25	32
Charger				
Charge Voltage 'Absorption' / 'Float' (V)	57.6 / 55.2			
Battery Types	AGM / GEL / OPzV / Lead-Carbon / Flooded / Traction / Lithium			
Max AC Charge Current (A)	35	60	70	90
Temperature Compensation	Yes			
Solar Charge Controller				
Max Output Current (A)	60	100 (50 per tracker)		120 (60 per tracker)
Maximum PV Open Circuit Voltage (V)	250	250	250	250
MPPT Voltage Range (V)	65~245			
Number of MPPT Trackers	1	2	2	2
Maximum PV Input Current Per Tracker (A)	36	36+36	36+36	36+36
Max PV Short Circuit Current Per Tracker	40	40+40	40+40	40+40
Maximum Charge Power	3450W @ 57.6V	5760W @ 57.6V total, 2880W @ 57.6V per tracker		6900W @ 57.6V total, 3450W @ 57.6V per tracker
Allowable Maximum PV Power Per Tracker	5200	4400 + 4400		5200 + 5200
Charge Voltage 'Absorption' (V) / 'Float' (V)	57.6 / 55.2			
MPPT Charger Maximum Efficiency	98%			
MPPT Efficiency	>99.5%			
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;			
General Data				
AC Out1 Current (A)	32	50	50	50
Smart Port Current (A)	N/A	50	50	50
Transfer Time	4ms (<15ms in Weak AC source Mode)			
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			
General Purpose Com. Port	RS485 (GPRS, WLAN optional)			
Programmable Relay	1x (30Vdc/3A or 250Vac/3A)			
Operating Temperature Range	-20°C to 65°C			
Relative Humidity in Operation	95% without condensation			
Altitude (m)	2000			
Mechanical Data				
Dimension (mm) (max)	499*272*144	570*310*154		620*320*164
Net Weight (kg)	18	29	31	34
Cooling / Protection Index	Forced fan / IP21			
Standards				
Safety	EN-IEC 62477-1, EN-IEC 62109-1, EN-IEC 62109-2			
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			

Note: Kinergy II-WiFi wireless data logger included as standard with RiiO Sun II.

Raython R Series

All-in-One Energy Storage System

For Off-Grid Applications



Raython R5-II

5kVA | 10.08kWh-20.16kWh

Raython R8-II

8kVA | 15.12kWh-20.16kWh

TBB Raython R Series is a single-phase, standalone solar power system that seamlessly integrates a transformer-based inverter with built-in MPPT, lithium batteries, a touch-screen device for local monitoring and energy management, and power distribution accessories — all housed within a compact IP54-rated cabinet. It intelligently optimizes solar energy utilization, delivering a reliable, uninterrupted, and independent power supply for residential homes and small businesses without grid access.

Superior Reliability

- Transformer-based, high surge power
- 4ms ultra-fast switch to battery power
- IP54 protection

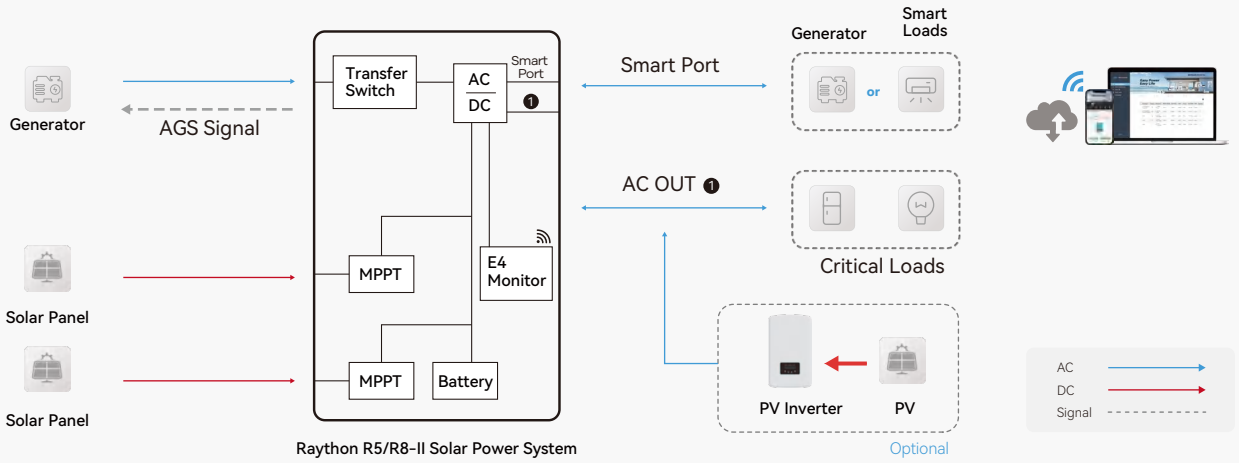
Exceptional Performance

- Robust for off-grid applications
- Parallel up to 2 cabinets, 16kVA/40.32kWh
- DC Coupling and AC Coupling
- Built-in a smart port for Gen input or 2nd AC output
- 2 MPPT trackers for flexible system design and higher yields
- AGS function, Power Control & Power Assist

Easy O&M

- All-in-one design for easy installation
- Auto restart when the PV or AC is recovering
- Local monitoring via E4 LCD Monitor
- Remote monitoring and control via Nova Web & APP

System Schematic



Raython R5/R8-II



Lithium Battery Module

- R5-II:10.08kWh-20.16kWh
- R8-II:15.12kWh-20.16kWh

E4 LCD Monitor

- For system local monitoring and control

Off-Grid Inverter
RiiO Sun II 5/8kVA (Single-Phase)

- AC charger + Inverter + MPPT charger + AC transfer switch (50A)
- Max output power: 5000W (R5-II) / 8000W (R8-II)

AC+DC+PV Distribution

Model	Raython R5-II	Raython R8-II
AC Input		
Generator compatible	Yes	
AC input voltage range (VAC)	175~265	
AC input frequency range (Hz)	45~65	
AC input current (transfer switch) (A)	50	
Inverter		
Product topology	Transformer based	
Nominal battery voltage (VDC)	48	
Input voltage range (VDC)	42~68	
AC output voltage (VAC)	220/230/240 ±2%	
AC output frequency (Hz)	50/60 ± 0.1%	
Harmonic distortion	<2%	
Cont. output power at 25℃ (VA)	5000	8000
Max output power at 25℃ (W)	5000	8000
Peak power (W)	10000	16000
Maximum efficiency	94%	95%
Zero load power (W)	22	32
Max AC charge current (A)	60	90
AC OUT1 Current (A)	50	
Transfer time	<4ms (<15ms in Weak AC source Mode>)	
Solar Charge Controller		
Max output current (A)	100 (60 per tracker)	120 (60 per tracker)
Maximum PV power (W)	4400+4400	5200+5200
PV open circuit voltage (V)	250	
Maximum PV short circuit current (A)	40+40	
MPPT voltage range (V)	65~245	
MPPT charger maximum efficiency	98%	
MPPT efficiency	>99.5%	
Battery		
Battery type	Lithium	
Max AC charge Current (A)	60	90
Max PV charge Current (A)	100	120
Nominal energy capacity	10.08kWh/15.12kWh/20.16kWh	15.12kWh/20.16kWh
General Data		
General purpose com. port	Wi-Fi with E4 LCD monitor	
Operating temperature range	Inverter: -20˚C to 65˚C / Battery: discharge -20˚C to 55˚C, charge 0˚C to 55˚C	
Relative humidity in operation	95% without condensation	
Altitude (m)	2000	
Mechanical Data		
Dimension (W*D*H) (mm) (max)	790*750*1030	
Net Weight (kg) (without battery)	105	116
Cooling	Forced fan	
Protection index	IP54	
Standards		
Safety	EN-IEC 62477-1, EN-IEC 62109-1, EN-IEC 62109-2	
EMC	EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-3-11, EN61000-3-12	

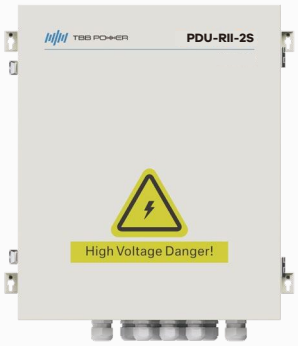
Raython Parallel Kit

Raython series of the same model support parallel connection up to 2 cabinets. The table below lists the necessary parallel kits for parallel connection.

Model	Parallel Configurations	AC Distribution BOX	DC Parallel Kit
Raython R5-II	Parallel connection of 2 cabinets in a single-phase system	1*PDU-RII-2S	1*KIT R/RP5-II-2P
Raython R8-II	Parallel connection of 2 cabinets in a single-phase system	1*PDU-RII-2S	1*KIT R/RP8-II-2P

AC Distribution BOX

PDU-RII-2S | 230V | 125A



PDU-RII-2S
AC Distribution BOX

- For parallel connection in a single-phase system
- Applicable to: Raython R5/R8-II
- 230V/125A
- IP54
- Wall-mounted

Model No.	PDU-RII-2S
Rated voltage (VAC)/ Frequency (Hz)	230VAC (50/60Hz)
Rated current (A)	125
Inverter input circuit breaker	2xC Type, 2P, 50A
Inverter output circuit breaker	2xC Type, 2P, 50A
System input circuit breaker	C Type, 2P, 125A
Maintain Bypass Switch	C Type, 2P, 125A
System output circuit breaker	C Type, 2P, 125A
Surge protection device	In: 20kA (8/20μs), Imax: 40kA (8/20μs)
AC input terminal	135A, 2AWG, M6 screw
Wiring terminals for inverter input and output, PV inverter output	76A, 7AWG, M4 screw
System output wiring terminal	135A, 2AWG, M6 screw
Ground copper bar	2*30*106mm, 8 holes (M6)
Temperature, altitude	-25℃ ~ +60℃, 2000m (> 2000m derating)
General data	Galvanized sheet, spray painted surface RAL9003, P54, Wall-mouted
Dimensions/ weight	550*600*120mm,15kg

DC Parallel Kit KIT R/RP5-II-2P / KIT R/RP8-II-2P

Key Components of DC Parallel Kit

KIT R/RP5-II-2P

For parallel connection of 2 cabinets of Raython R5-II

No	Item	Quantity	Unit
1	Miniature Circuit Breaker, 80A, 4-Pole, Type C (MDB1-125C80/4)	2	PCS
2	Screw, M4×50, Cross recessed pan head combination, Stainless Steel 304, A2-70	15	PCS
3	Screw, M8×20, Hex head combination, Carbon Steel 8.8, color zinc plated	6	PCS
4	Lower Cover Plate for Parallel Connection, Galvanized Steel	2	PCS
5	Copper Busbar (Upper), T2 Copper, Nickel Plated, for Parallel Switch Connection	4	PCS
6	Copper Busbar (Lower), T2 Copper, Nickel Plated, for Parallel Switch Connection	4	PCS
7	System Communication Cable, 5m, RJ45 (UTP 4PR, 24AWG)	2	PCS
8	Power Cable, 50mm², Black, 3m length with terminals	1	PCS
9	Power Cable, 50mm², Red, 3m length with terminals	1	PCS

Note: The above list is subject to change without prior notice, based on actual parallel configurations.

KIT R/RP8-II-2P

For parallel connection of 2 cabinets of Raython R8-II

No	Item	Quantity	Unit
1	Miniature Circuit Breaker, 125A, 4-Pole, Type C (MDB1-125C125/4)	2	PCS
2	Screw, M4×50, Cross recessed pan head combination, Stainless Steel 304, A2-70	15	PCS
3	Screw, M8×20, Hex head combination, Carbon Steel 8.8, color zinc plated	6	PCS
4	Lower Cover Plate for Parallel Connection, Galvanized Steel	2	PCS
5	Copper Busbar (Upper), T2 Copper, Nickel Plated, for Parallel Switch Connection	4	PCS
6	Copper Busbar (Lower), T2 Copper, Nickel Plated, for Parallel Switch Connection	4	PCS
7	System Communication Cable, 5m, RJ45 (UTP 4PR, 24AWG)	2	PCS
8	Power Cable, 50mm², Black, 3m length with terminals	1	PCS
9	Power Cable, 50mm², Red, 3m length with terminals	1	PCS

Note: The above list is subject to change without prior notice, based on actual parallel configurations.

Matrix II

Off-Grid Inverter



10kW / 15kW

Transformer-based
Built-in 600/900V MPPT
Built-in Multiple MPPT Trackers
Two AC inputs & Two AC outputs

Matrix II is an advanced all-in-one transformer-based inverter purpose-built for off-grid applications, featuring a high-efficiency inverter charger with a 600/900V MPPT solar charge controller. The inverter offers dual AC inputs and outputs for automatic connection to the active power source. Outperforming conventional transformer-based inverters, Matrix II transformer-based off-grid inverter maximizes solar energy use by preferentially powering loads and charging batteries, minimizing waste.

Enhanced Flexibility

- AC Coupling and DC Coupling
- Parallel up to 3 units, 45kW
- Two AC inputs and two AC outputs
- Built-in 600/900V MPPT solar charge controller for easy installation and lower cable costs
- Built-in multiple MPPT trackers for flexible system design and higher yields
- AGS function, Power Control & Power Assist

Superior Reliability

- Transformer-based, high surge power
- 0ms ultra-fast switch to battery power
- Maximize solar energy utilization and minimize energy waste
- Minimize the impact of loads on batteries when the grid is available

Easy O&M

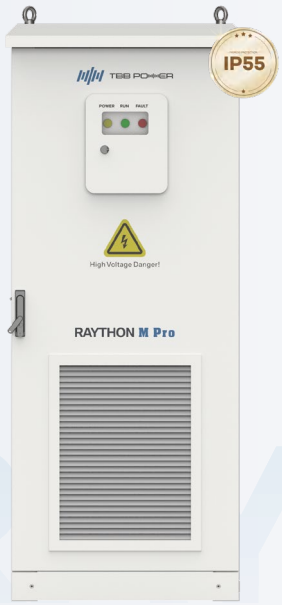
- System wake-up when the AC or PV is regained
- Bluetooth-based setup and local monitoring via TBB Nova APP
- Local monitoring via E4 LCD Monitor
- Remote monitoring and control via Nova Web & APP

Model	Matrix II 10.0S Pro-R	Matrix II 15.0S Pro-R
Product topology	Transformer based	
Power Assist / Grid feedback	Yes / Yes	
AC input range	175~265VAC / 45Hz~55Hz@50Hz (normal), 55Hz~65Hz@60Hz (normal)	
AC input Current (transfer switch) (A)	2x100	2x100
Inverter		
Nominal battery voltage / Input voltage	48V / 42~68V	
AC output voltage / frequency	220/230/240VAC ± 2% / 50/60Hz ± 0.1%	
Harmonic distortion	<2%	
Cont. output power at 25°C (VA)	10000	15000
Max output power (30min) at 25°C (W)	10000	15000
Cont. output power at 25°C / 40°C / 65°C (W)	8000 / 7000 / 6000	13000 / 10000 / 7500
Peak power (W)	30000	45000
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	
Solar Charge Controller		
Max output current(A)	300	400
Maximum PV open circuit voltage (V)	600	900
PV operating voltage range (V)	120-600	160-900
MPPT voltage range (V)	80-525	80-720
Maximum charge Power	17500W @ 57.6V total 5000W @ 57.6V per tracker	23000W @ 57.6V total 8000W @ 57.6V per tracker
Number of MPPT trackers	4	
Maximum PV input / short circuit current per tracker	20+20+20+20 / 25+25+25+25	
Allowable maximum PV panel power per tracker	8000+8000+8000+8000	10000+10000+10000+10000
Charge voltage 'absorption' (V) / 'float' (V)	Default: 57.6 / 55.2	
Charger voltage range (V)	40-60	
Maximum efficiency / MPPT efficiency	97% / >99.9%	
PV array insulation resistance detection	Integrated	
Protection	a) battery voltage too high; b) battery voltage too low; c) temperature too high; d) PV reverse polarity; e) surge	
General Data		
Main Output (AC Out1) Current (A)	100	100
Auxiliary Output (AC Out2) Current (A)	50	
Transfer time	0ms (<15ms in Weak AC source Mode)	
Remote on-off / Programmable relay	Yes / 3x (30Vdc/3A or 250Vac/3A)	
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 operation	
ComMON communication port	For remote monitoring and system integration	
Operating temperature range / Relative humidity	-40°C~+65°C / 95% without condensation	
Altitude (m)	3500	
Mechanical Data		
Battery Connection / AC Connection	Bolts M8 (2+2) / Bolts M6	
PV connection	Bolts M3	
Dimension (mm) (max) / Net Weight (kg)	725*520*320 (Excluding connectors and brackets) / 90	725*520*320 (Excluding connectors and brackets) / 108
Cooling / Protection Category	Forced fan / IP20	
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	

Raython M series

All-in-One Energy Storage System

For Off-Grid Applications



Raython M10 Pro

10kW | 20.16kWh-40.32kWh

Raython M15 Pro

15kW | 30.24kWh-40.32kWh

TBB Raython M Series is an all-in-one, standalone solar power system designed to address energy challenges faced by homes and businesses without grid access. Featuring a highly integrated design, the Raython M Series enables fast installation and effortless commissioning.

Exceptional Performance

- All-in-one design
- Factory assembled and tested
- Off-grid inverter with built-in MPPT supporting up to 900Voc
- Auto Generator Start/Stop (AGS) functionality
- Power Control & Power Assist functions

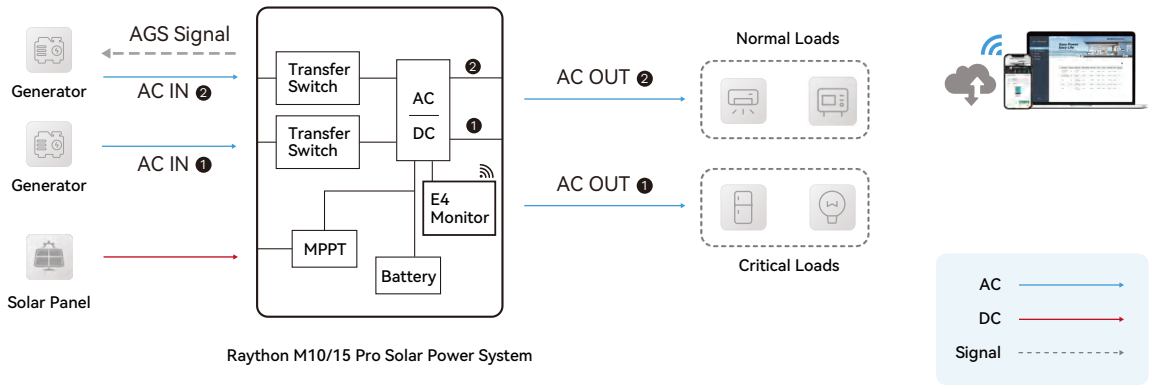
Enhanced Reliability

- 0ms UPS transfer time
- Excellent surge capability
- IP55 protection
- Built-in air conditioning ensures batteries operate within the recommended temperature range
- Enhanced safety with an integrated fire suppression system

Increased Flexibility

- 4 MPPT trackers
- Two AC inputs & two AC outputs
- Local monitoring and control via E4 LCD Monitor
- Remote monitoring and control via NOVA Web & App

System Schematic for Raython M10/15 Pro



Raython M10/15 Pro Solar Power System

Model	Raython M10 Pro	Raython M15 Pro
AC Input		
Generator compatible	Yes	
Power assist	Yes	
Grid feedback	Yes	
AC input voltage range (VAC)	175~265	
AC input frequency range (Hz)	45Hz~55Hz@50Hz (normal), 55Hz~65Hz@60Hz (normal)	
AC input current (transfer switch) (A)	2x100	
Inverter		
Product topology	Transformer based	
Nominal battery voltage (VDC)	48	
Input voltage range (VDC)	42~68	
AC output voltage (VAC)	220/230/240 ±2%	
AC output frequency (Hz)	50/60 ± 0.1%	
Harmonic distortion	<2%	
Cont. output power at 25℃ (VA)	10000	15000
Peak power (30min) (W)	10000	15000
Cont. output power at 25℃ (W)	8000	13000
Cont. output power at 40℃ (W)	7000	10000
Maximum efficiency	96%	
Zero load power (W)	40	60
Max AC charge current (A)	140	200
Main output (AC Out1) current (A)	100	100
Transfer time	0ms (<15ms in weak AC source mode>)	
Solar Charge Controller		
Max output current (A)	300	400
Maximum PV open circuit voltage (V)	600	900
Start-up voltage (V)	120	160
Maximum charge Power	17500W @ 57.6V total, 5000W @ 57.6V per tracker	23000W @ 57.6V total, 8000W @ 57.6V per tracker
PV operating voltage range (V)	120~600	160~900
MPPT voltage range (V)	80~525	80~720
Number of MPPT trackers	4	4
Maximum PV input current per tracker (A)	20+20+20+20	20+20+20+20
Maximum PV short circuit current per tracker (A)	25+25+25+25	25+25+25+25
Allowable maximum PV panel power per tracker (W)	8000+8000+8000+8000	10000+10000+10000+10000
Maximum efficiency	97%	
MPPT efficiency	> 99.9%	
Battery		
Battery type	LiFePO4 Li-ion battery	
Nominal energy capacity	20.16kWh-40.32kWh	30.24kWh-40.32kWh
General Data		
General purpose com. port	Wi-Fi with E4 LCD monitor	
Operating temperature range	Inverter: -20˚C to 65˚C / Battery: discharge -20˚C to 55˚C, charge 0˚C to 55˚C	
Relative humidity in operation	95% without condensation	
Altitude (m)	2000	
Mechanical Data		
Dimension (W*D*H) (mm) (max)	820*1210*2040 (including lifting rings)	
Cooling	Battery Compartment: Air conditioning; Electrical Compartment: Temperature controlled forced air cooling	
Protection index	IP55	
Standards		
Safety	EN-IEC 62477-1, EN-IEC 62109-1,EN-IEC 62109-2,EN-IEC 62040-1	
EMC	EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4	

Raython M

All-in-One ESS



INGE

Hybrid Inverter

Three Phase | 220/380Vac, 230/400Vac, 240/415Vac

20kW

TBB INGE Series three-phase hybrid inverter is purpose-built for off-grid and backup power applications. Designed to unify solar, battery, grid, and generator power sources into a single intelligent ecosystem, the INGE Series delivers uninterrupted clean energy while reducing fuel costs. Its modular design scales seamlessly from 20kW to 60kW, empowering residential to small commercial deployments with industrial-grade resilience and zero-downtime operation.



IP65 Rating

60kW Scalable Output

800V Max. PV Input

High Efficiency

PV-to-Battery Isolation

Built-in EMS

Ultra-Flexible

- Robust for off-grid and backup power applications
- Dual built-in MPPT
- Max. 800V PV input for reduced BOS costs
- Parallel up to 3 units **(max. 60kW)** with independent battery banks (different capacities supported)
- Dedicated GEN port for generator input/smart load management
- Three-phase unbalanced output
- Support operation without batteries

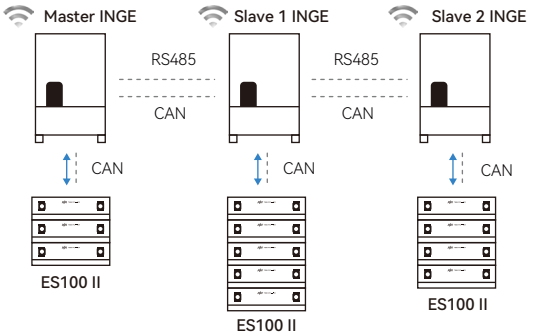
Easy O&M

- Integrated EMS for smart energy management and reliable system protection
- Integrated LCD screen for simplified, intuitive system setup & local monitoring
- Built-in Wi-Fi for remote management and firmware updates via NOVA App & Web
- Wall-mounted design for simple, space-saving installation

Industrial-grade Resilience

- **PV-to-Battery galvanic isolation** to protect lithium batteries
- 4ms on/off-grid switching
- **Excellent surge capacity** for motorized loads
- Full power operation at ≤45℃
- **IP65-rated** enclosure for harsh environment
- 400A max charging/discharging current
- **97.6% high efficiency**, smaller battery investment
- Quiet operation ≤50dB

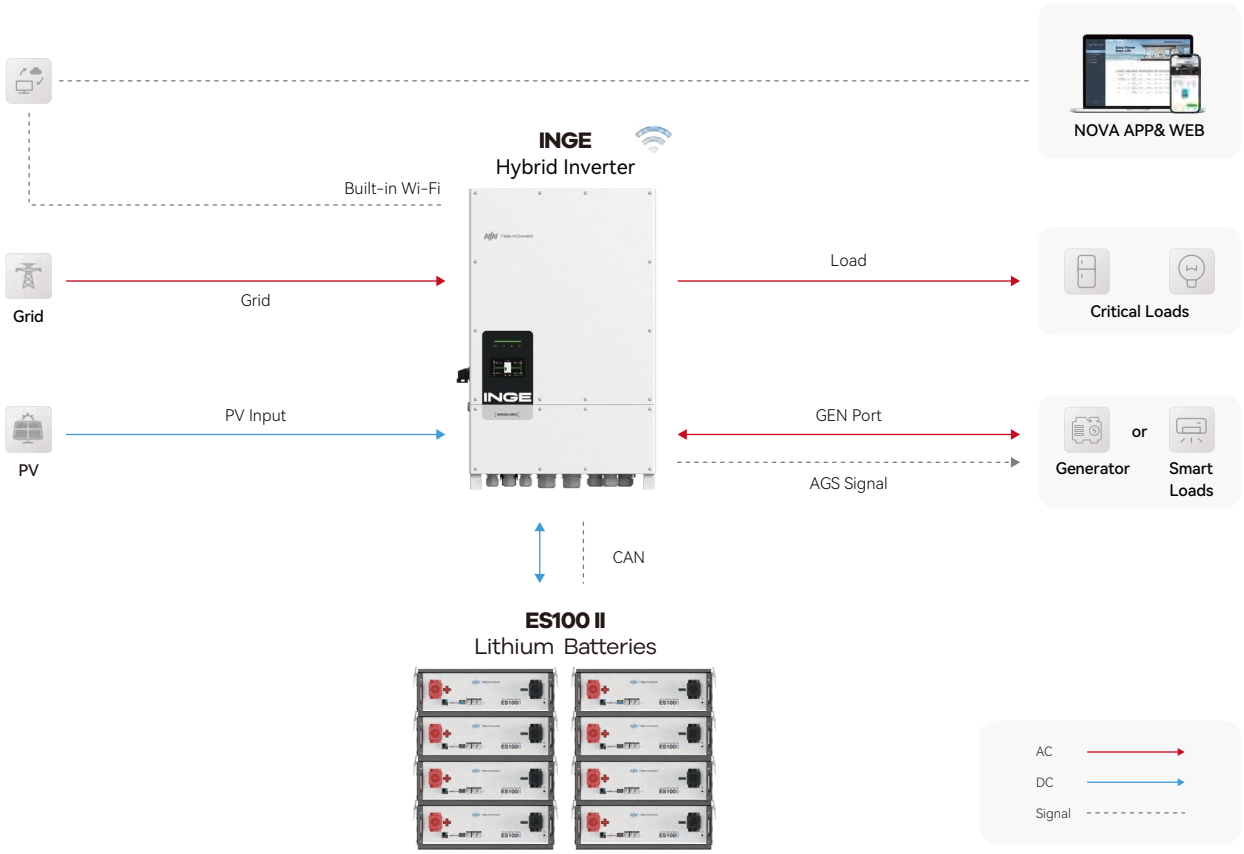
Scalable up to 60kW



Application Scenarios

INGE: Off-Grid and Backup Power System

TBB INGE system delivers intelligent energy management for off-grid and backup applications. Designed for seamless power supply, it maximizes solar usage, minimizes grid consumption, and ensures continuous, independent power supply day and night.



Key Advantages

- **Parallel up to 3 units (60kW)** for large residential and small business applications
- Supports **independent battery banks of different capacities** per unit for faster, customizable installation
- **High efficiency** reduces energy loss and battery investment
- **Max. 800V PV input** for reduced BOS costs
- **Electrical isolation between PV input and battery** ensures enhanced battery protection
- **Integrated EMS** for smart energy management and reliable system protection
- **Dedicated GEN port** for generator input or smart load management
- **IP65-rated enclosure** ensures reliable outdoor performance
- **Full remote monitoring and control** via NOVA App & Web with Wi-Fi connectivity

Model	INGE T20
Grid	
Power Assist	Yes
Nominal AC Voltage and Frequency	3L+N+PE, Three phase, 220/380Vac, 230/400Vac, 240/415Vac, 50/60Hz
AC Voltage and Frequency Range	-20%~+20% or according to grid code standard; 50Hz:+/-5Hz; 60Hz:+/-5Hz
Nominal AC Current (A)	70
Generator	
Power Assist	Yes
Nominal AC Voltage and Frequency	3L+N+PE, Three phase, 220/380Vac, 230/400Vac, 240/415Vac, 50/60Hz
AC Voltage and Frequency Range	-20%~+20%; 40Hz~70Hz
Nominal AC Current (A)	70
Inverter	
Nominal AC Voltage and Frequency	3L+N+PE, Three phase, 230/400Vac+/-2%; 50/60Hz+/-0.1%
Harmonic Distortion	Linear load<2%, Non-linear load <5%
Nominal Output Power (W)	20000
Max. AC Output Power (VA)	22000
Peak Power (off-grid)	2 times of rated power
Nominal AC Output Current (A)	30.3
Power Factor Adjustment Range	0.8 leading to 0.8 lagging
Maximum Efficiency	97.6%
Battery	
DC Voltage Range (V)	42~60
Battery Modules Types	Lithium battery (Self adaption to BMS)
Max. Charging / Discharging Current (A)	400 / 400
Solar	
Max. PV Input Power (W)	30000
Max. PV Input Voltage (V)	800
MPPT Voltage Range / Start-up Voltage (V)	150~750 / 160
Max. PV Input Current / Max. Short Current (A)	36+36 / 45+45
MPPT Number / No. Strings Per MPPT Tracker	2 / 2+2
General	
Backup	UPS
Transfer Time	4ms
Protection	a) output short circuit, b) overload, c) battery voltage too high, d) DC Type II surge protection, e) AC Type II surge protection
CAN Bus Communication Port	For parallel operation
General Purpose Communication Port	RS485, CAN
Monitor Mode	Wi-Fi
Display	LED + Touch LCD screen
Operating Temperature Range & Relative Humidity	-40℃~65℃, >45℃ de-rating; 95% without condensation
Altitude (m)	4000
Dimension (W×H×D) (mm)	505x775x299 (Excluding connectors and brackets)
Weight (kg)	70
Cooling	Smart Cooling
IP Protection	IP65 (Outdoor)
Safety & EMC	EN-IEC 62477-1, EN-IEC 62109-1, EN-IEC 62109-2 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

ES100 II

Lithium Battery Module



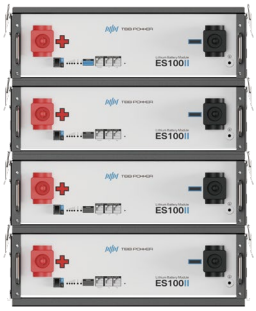
48V 105Ah 5.04kWh

ES100 II is the latest 48V 105Ah lithium battery module provided by TBB POWER, designed for backup power system, solar off-grid system, and residential energy storage systems, with good compatibility, high energy density, fashionable design and safe long cycling life. Designed with the functionality to automatically assign the communication address of the slave modules, ES100 II greatly simplifies the parallel connection process.

- Safe lithium iron phosphate battery cell with high energy density, compact design
- Support up to 32 modules in parallel
- Automatically assign the communication address of the slave modules, easy to install
- Support short-time high-current charge and discharge
- Advanced high capacity, 90% DoD and 6000 cycles life
- Support external CAN communication, compatible with leading inverter brands

- Integrated with RS485 communication port, supports RS485 communication with TBB inverters
- Universal positive and negative terminals, convenient for users to install
- Coming standard with 300A parallel bus bar
- Available with simple mounting brackets and RACK cabinet with IP65 protection grade
- Equipped with intelligent BMS for each battery pack to manage modules effectively
- Practical pull ear design improves operation convenience

Optional Accessories



Simple Mounting Bracket



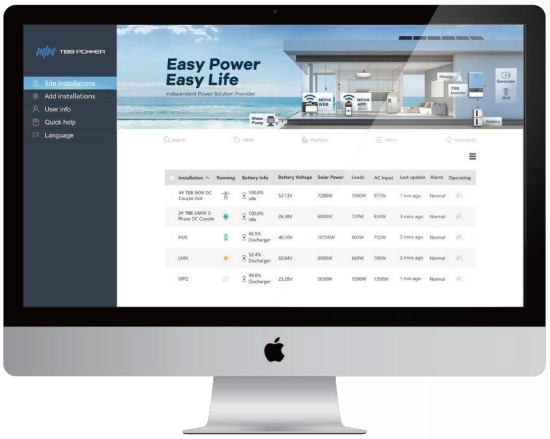
IP65 Power Rack Cabinet

Model	ES100 II
Configuration	15S1P
Nominal Voltage (V)	48
Work Voltage Range (V)	42~54.75
Nominal Capacity (Ah)	105
Nominal Energy (kWh)	5.04
Max Power (kW)	5.04
Peak Current (A)	120
Charge Current (A)	52.5
Maximum Charge Current (A)	105
Discharge Current (A)	52.5
Maximum Discharge Current (A)	105
Cycle Life	6000 (90% DoD), @25℃, 0.5C
Operating Temperature	Discharge: -20℃~+55℃ Charge: 0℃~+55℃
Recommended Operating Temperature	Discharge: +15℃~+30℃ Charge: +15℃~+30℃ Storage: 0℃~+35℃, 3 months
Altitude	<2000m
Humidity	<95% (without condensation)
Cooling Method	Natural heat dissipation
Protection Degree	IP20
Dimension (mm) (W*H*D)	482.6*133.4*450
Weight (kg)	40
Standards	IEC62619 / CE / UN38.3

TBB NOVA APP & WEB

Monitor and Control Your Solar System Anywhere Anytime

NOVA App and NOVA Web are FREE energy management and monitoring system designed by TBB POWER, displaying real-time data of all system components and history records, providing easy access to controlling the power generation and power consumption. According to historical data, users can actively adjust and optimize power consumption habits.



Devices for remote monitoring communication



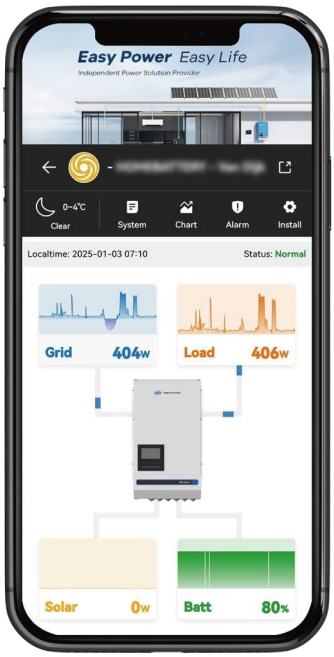
E4 LCD Monitor



Kinergy II-WiFi
Wireless Data Logger

Free & Comprehensive Energy Management & Monitoring System

- Live data, status overview and system analysis
- System configuration and parameter setting
- Customizable alarm setting
- Detailed report for power harvest, storage and consumption
- Web platform compatible with Windows and Mac PC
- Mobile APP available for Android and iOS devices



Convenient & Cost-saving Management for Dealers / Installers

- Remote settings and updates to reduce site visit costs
- Real-time alarm notifications to catch potential issues early
- History record for easier troubleshooting
- Site sharing to allow one site to be jointly monitored and maintained
- Online site allocation: designate personnel for optimal & efficient site management

nova.tbbrenewable.com

Android

iOS



E4 LCD Monitor

- 4.3” LCD touchscreen for intuitive, real-time local monitoring and EMS
- Supports Wi-Fi communication to transmit system data to NOVA APP & Web for remote monitoring and control



Kinergy II Wireless Data Logger

- External communication device for transferring system data to NOVA APP & Web via Wi-Fi for remote monitoring and control
- Supports Wi-Fi Protected Setup (WPS)
- Supports BLE configuration via mobile APP



TBB Interface

- Efficient PC tool for configuring, updating, and diagnosing TBB inverters

Case Studies

TBB Powers 24/7 Sustainable Farming in Greece



A Greek farm overcame unreliable power with TBB's reliable energy system, enabling uninterrupted operations, lower costs, and eco-friendly livestock management.

Solution

- 3 x 5kVA RiiO Sun II Inverters (15kVA 3-phase)
- 5 x 48V/5.04kWh PS5 Batteries (25.2kWh, 6000 cycles)
- 18 x 565W Solar Panels (10.17kW)
- Kinergy II-WiFi Data Logger (NOVA platform)

Key Benefits

- 4ms ultra-fast backup – No downtime
- Starts heavy-duty farm equipment effortlessly
- Scalable to 9 units for growing needs
- Dual MPPT maximizes solar efficiency
- Remote monitoring via NOVA app

Ensuring Energy Independence for a Hotel in Myanmar



TBB's off-grid solution empowers a hotel in Myanmar with reliable, round-the-clock power, overcoming frequent grid outages that once disrupted daily operations.

Solution

- 9 x 6kVA RiiO Sun II Off-Grid Inverters (54kVA total)
- 32 x ES100 Lithium Batteries (161.28kWh storage)
- E4 LCD Monitor & TBB NOVA Portal for 24/7 local and remote monitoring

Key Benefits

- 3x surge capability for stable off-grid performance with heavy loads
- Dual MPPTs and smart port for optimized solar harvesting and load control
- 6000-cycle lithium battery at 90% DoD for long-lasting backup power

Cyprus Family Cuts Energy Costs with TBB Off-Grid Solar Solution





A local family in Cyprus adopted TBB's off-grid solar system to slash electricity bills and embrace sustainable living.

Solution

- 4 x 8kVA RiiO Sun II Off-Grid Inverters (32kVA total, parallel)
- 6 x 48V/5.04kWh ES100 Lithium Batteries (30.24kWh storage)
- 30 x 455W PV Panels (13.65kW total)
- E4 LCD Monitor for intuitive local energy management

Key Benefits

- Reliable off-grid power (transformer-based, heavy-load capable)
- Reduced generator use (AGS auto-switch cuts fuel costs)
- Flexible expansion (scalable to 72kVA, supports 3-phase)
- Optimized solar harvest (dual MPPTs for higher efficiency)
- Energy independence, lower costs, and a greener lifestyle

Powering Healthcare in Zambia's Off-Grid Regions





TBB delivers 24/7 clean energy to remote clinics, ensuring uninterrupted power for medical equipment, refrigeration, and lighting.

Solution

- 2 x 8kVA RiiO Sun II Off-Grid Inverters (parallel)
- 20 x 48V/5.04kWh ES100 II Lithium Batteries (100.8kWh storage)
- Kinergy II-WiFi Data Logger for remote oversight

Key Benefits

- 3x surge protection for sensitive medical devices
- Scalable to 72kVA for future needs
- Real-time monitoring via TBB NOVA APP
- Cuts diesel reliance—cleaner, cheaper, reliable

TBB INSIDE

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