



CONNECTING  
**THE WORLD**  
WITH  
**POWER**

 **TANDHAN**  
POWER

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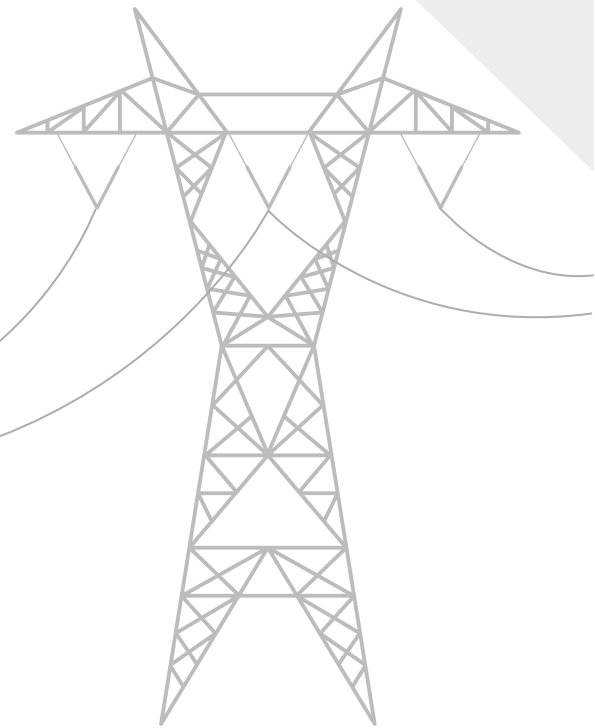
 **TANDHAN****Tandhan Group,**

with a legacy of more than 3 decades, has always taken up challenges, and being robust, courageous along with using deep customer insights has constantly developed innovative technology. Our greatest strength has been our investment in people and channel partners, enabling us to learn while we worked, building on relationship and collaborations with channel partners based on trust and respect for each other.

- We at Tandhan take great pride in deliverables
- We at Tandhan constantly elevate the level aggressively with pioneering research and development programmes
- We at Tandhan assure highest quality products and services, catering to clients and patrons across the globe

## OUR OTHER **VERTICALS**

- Tandhan Polyplast Limited
- Tandhan Cotton Mills Private Limited (Tandhan Denim)
- NX Hotels Private Limited
- Tandhan Power Technologies Private Limited
- FMJ Sarees Private Limited
- Jalan Sarees Private Limited
- Tandhan Fashion Private Limited
- Tandhan Exim Private Limited



## OUR GLOBAL **PRESENCE**

Dhaka Power Traders  
(BANGLADESH)

Shin Thit Kyaw Company Limited  
(MYANMAR)

Global Power Traders  
(SUDAN)

Paktika Ahmadi Trading  
(AFGHANISTAN)

Rainbow Power Solutions  
(SOUTH AFRICA)

Power Global  
General Trading LLC  
(DUBAI)

Simplified Solar Solutions  
(KENYA)

Unisolar Industries Ltd.  
(ZAMBIA)

Sustainable Global  
Power Tech Ltd.  
(NIGERIA)



## POWERING PROGRESS **ACROSS THE WORLD**

In a world driven by climate responsibility and energy resilience, Tandhan Power stands as a symbol of trust, performance, and innovation. We are not just a solar solutions provider – we are a long-term partner in your clean energy journey. From India to global markets, we design and deliver turnkey solar power solutions that energize industries, empower communities, and create measurable impact. Every project reflects our commitment to quality, efficiency, and reliability.

## ACCELERATING **THE SHIFT TO CLEAN ENERGY**

Our mission is simple yet powerful – to drive the global transition toward sustainable energy through dependable, high-performance solar systems. Backed by deep technical expertise and a culture of excellence, we ensure seamless execution across projects of every scale and geography. Precision planning, engineering strength, and uncompromising standards define our approach.

## A GLOBAL FOOTPRINT: **A UNIFIED STANDARD OF EXCELLENCE**

Tandhan Power’s strength lies in execution. With successful projects delivered across diverse markets, we bring international best practices and proven operational expertise to every new venture.

## PROJECTS DELIVERED **ACROSS THE GLOBE**

REGION / COUNTRY	PROJECT TYPE	HIGHLIGHT
Africa	C&I Rooftop and Residential (Multiple Sites)	Empowered manufacturing facilities and rural communities with reliable, off-grid and grid-tied solar solutions, reducing diesel dependency.
Southeast Asia	C&I Rooftop and Residential (Multiple Sites)	Executed multi-site rooftop installations for a multinational corporation, delivering consistent quality and optimized energy output across locations.
Middle East	Ground-Mounted, Rooftop & Carport Solar Projects	Commissioned a high-efficiency solar farm in extreme desert conditions, demonstrating technological resilience and engineering excellence.

OUR POWER PROJECT INSTALLATIONS **ACROSS THE WORLD**



Bangladesh



Myanmar



Afghanistan



Nigeria



Kenya



Zambia



Kenya



Dubai



Zambia

# Thunder-TP

## I N V E R T E R

### PRODUCT DESCRIPTION

Introducing all-new Tandhan Power's THUNDER-TP Series. A Modern Pure Sine Wave Inverter/UPS range, endowed with first in segment features. The Pure Sine Wave output is clean, regulated, completely stable, distortion-free and absolutely safe for running the most sophisticated and sensitive modern appliances. Based on advanced/next generation inverter technology, Tandhan Power ensures the highest safety and efficiency in the class.

### PRODUCT HIGHLIGHTS

- Modern Pure Sine Wave Home Inverter UPS
- Safe for sensitive equipment
- LED multi-information display
- Smart ASIC (auto sense intelligence control) technology optimises charging profile for long battery life
- Best in Class Switchover for Uninterrupted Work and Equipment Protection
- Noiseless Operations
- Battery Charging even at Input Voltage as low as 110V AC



Range 1150 VA to 5500 VA

## PRODUCT SPECIFICATIONS

MODEL NAME	1150	1500	1650	2875	4000	5500
Output Capacity (Bulb Load)	720 W	900 W	1200 W	1900 W	2800 W	4000 W
<b>INPUT PARAMETERS</b>						
Battery Input Nominal Voltage (Vdc)	12 V			24 V	48 V	
Main Input Voltage Range (UPS Mode)	180 VAC - 265 VAC ± 5 VAC					
Main Input Voltage Range(Normal Mode)	90 VAC - 280 VAC ± 10 VAC					
<b>BATTERY CHARGING</b>						
Max. Grid Charging Current	11A, 15A (2 modes)		12A, 18A (2 modes)			
<b>MODES</b>						
UPS/NORMAL	Via Switch (Back Side)					
Charging Mode (HC/NC)	Via Switch (Back Side)					
Battery Mode (TT/FT)	Via Switch (Back Side)					
<b>OUTPUT PARAMETERS</b>						
Wave Form Type	PURE SINE WAVE					
Output Frequency	50 Hz ± 0.5 Hz					
Overload Protection	Provided at >100% with Auto Reset					
Low Battery Protection	Provided at ≤ 10.4V (Per Battery) with Auto Reset					
Short Circuit Protection	Provided at ≥ 300% with Manual Reset					
Over Temperature Protection	Provided at > 85°C					
<b>CHANGE OVER TIME</b>						
In UPS Mode	≤12 milliseconds					
In Normal Mode	≤50 milliseconds					
<b>BATTERY PARAMETER (PER BATTERY)</b>						
Boost Voltage	TT Mode : 14.6 VDC ± 0.2 VDC		FT Mode : 14.2 VDC ± 0.2 VDC			
Float Voltage	TT Mode : 13.8 VDC ± 0.2 VDC		FT Mode : 13.5 VDC ± 0.2 VDC			
Low Battery Warning	10.6 VDC ± 0.2 VDC					
Low Battery Cut	10.4 VDC ± 0.2 VDC					
<b>ENVIRONMENT</b>						
Forced Cooling	Through Cooling FAN					
Humidity	0-90% Non Condensing					
Operating & Storage Temperature	0-45°C					
<b>DISPLAY PARAMETERS</b>						
Display Type	LCD					
Parameters	Mains ON/OFF, Charging/Charged, Back-up ON, Low Battery, Over-load, Short Circuit, Over Temperature, Mains Fuse Blown/MCB Trip					

Note: Specifications and models subject to change without prior notice



## PRODUCT DESCRIPTION

Introducing the all new Tandhan Power-Sunmax series. In a world of me-too-products, you will find Pure Sine Wave Solar PCU a generation ahead of the entire category. That is because our breakthrough 'chip embedded sine wave' technology delivers the same current as you get from your mains.

## PRODUCT HIGHLIGHTS

- Sine Wave Output suitable for PC
- DSP Based Intelligent Control Circuit
- DSP Based Smart Charger
- Smarter Overload Senses and Short Circuit Protection
- Battery State Monitoring
- Graphical (LED)/LCD Display (Message and Faults)
- Great Power Saving



Range 1 KVA to 5 KVA

# PRODUCT SPECIFICATIONS



MODEL NAME	SUNMAX 1150	SUNMAX 2000	SUNMAX 3500	SUNMAX 5000	SUNMAX 5000
System Rating (VA/W)	900 VA	2000 VA	3500 VA	5 KVA	
Nominal Input Battery Voltage	12V	24V	48V		96V
Solar Charger Rating	40A	50A	60A	80A	50A
<b>INPUT PARAMETERS</b>					
Nominal Input Battery Voltage	12V	24V	48V		96V
Main Input Voltage Range (UPS Mode)	180 VAC - 265 VAC ± 5 VAC				
Main Input Voltage Range (Normal Mode)	100 VAC - 280 VAC ± 15 VAC				
<b>BATTERY CHARGING</b>					
Max. Grid Charging Current to Battery	15A				
Max. Solar Charging Current to Battery	20 A	30 A		25 A	
<b>MODES</b>					
Energy Saver Mode	Via Switch (Front Side Touch Feel)				
Solar Charging Selection Mode	Via Switch (Front Side Touch Feel)				
Grid Charging ON/OFF Mode	Via Energy Saver Modes				
UPS/NORMAL Mode	Via Switch (Front Side Touch Feel)				
<b>OUTPUT PARAMETERS</b>					
Wave Form Type	PURE SINE WAVE				
Output Voltage Regulation	200 VAC ± 10%			200 VAC ± 10%	
Output Frequency	50 Hz ± 0.5 Hz				
Peak Efficiency (with linear load)	≥ 73%	≥ 77%	≥ 80 %		
Distortion (THD)	<3% on linear load				
Overload Protection	Provided at >100% with Auto Reset				
Low Battery Protection	Provided at < 10.4V (Per Battery) with Auto Reset				
Short Circuit Protection	Provided at ≥300% with Manual Reset				
Over Temperature Protection	Provided at ≥85°C			Provided at >90°C	
<b>CHANGE OVER TIME</b>					
In UPS Mode	≤12 milliseconds				
In Normal Mode	≤50 milliseconds				
<b>BATTERY PARAMETER (PER BATTERY)</b>					
Boost Voltage	14.4 VDC ± 0.2 VDC				
Float Voltage	13.5 VDC ± 0.2 VDC				
Low Battery Cut	10.4 VDC ± 0.2 VDC				
Battery Type	12 V (100Ah to 240Ah)	12 V (100Ah to 300Ah)			
<b>SOLAR CHARGE CONTROLLER</b>					
PWM					
Solar Input Voltage range (Vmpp)	15V - 30V	30V-42V	60V-84V		120V - 170V
Max Solar DC Input Voltage (Voc)	37 V	50 V	100 V		200 V
Maximum Solar Array	660 W	1600 W	3500 W	5000 W	6700 W
Max. Solar Current	40A	50A	60A	80A	50A
Charger Efficiency	Uptp 92%				
<b>ENVIRONMENT</b>					
Forced Cooling	Through Cooling FAN				
Humidity	0-90% Non Condensing				
Operating & Storage Temperature	0-45°C				
<b>DISPLAY PARAMETERS</b>					
Display Type	Dual Display (LCD & LED)				
Parameters	Solar ON/OFF, Switch On/Off, Main On/Off, Main Fuse Blown / MCB Trip, Load Level Graph, PV Current & Voltage, Warnings & Protections, System Capacity, Energy Saver Mode On/Off, UPS/Normal Mode Status Etc				
Connectivity	Bluetooth / Wifi (Optional)				
<b>MECHANICAL PARAMETERS (WITHOUT PACKING)</b>					
Dimension (LxWxH) mm	275x230x133	265x400x167	315x290x460	410x350x500	

# AGM VRLA SMF BATTERY

## PRODUCT **FEATURES**

- Sealed Maintenance Free
- Eco-Friendly
- Easy Handling
- Easy Installation
- Extended Cycle Life
- Excellent Charge Retention & Recovery
- High Reliability
- Performance Characteristics Confirming to JISC8702
- Free from Orientation Constraints
- Minimal Voltage Drop
- Ready-to-use
- Low Self Discharge
- Superior High Rate Discharge
- Deep Cycle Application

## **CONSTRUCTION**

- Positive and negative plates in lead-tin-calcium alloy
- Separator - low resistance micro-porous glass
- The electrolyte is absorbed within this material, preventing acid leakage in case of accidental damage
- Terminals with a large surface area
- Self regulating pressure relief valve
- 100% ensured capacity (through Data-logger) during manufacturing
- Stronger, sturdier & attractive packaging
- Specially suited for UPS Power Backup and Solar Power Application



NXT 200-12 (12V 200Ah)

NXT 150-12 (12V 150Ah)

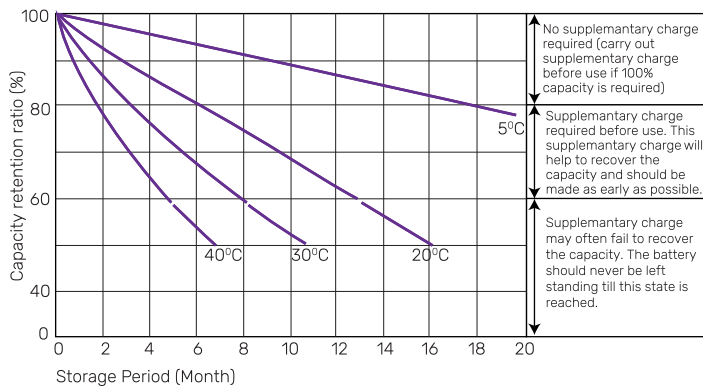
NXT100-12 (12V 100Ah)

# PRODUCT SPECIFICATIONS

BATTERY TYPE	NOMINAL VOLTAGE (V)	RATED CAPACITY (Ah) at 27°C								DIMENSIONS (MM)				WEIGHT (KG) ± 5%	INTERNAL RESISTANCE (M-OHM)	MAX DISCHARGE CURRENT (AMPS)
		20 hr 1.75 V/cell	10 hr 1.75 V/cell	5 hr 1.75 V/cell	3 hr 1.75 V/cell	2 hr 1.75 V/cell	90 min 1.75 V/cell	60 min 1.75 V/cell	30 min 1.75 V/cell	Overall height ±3	Height upto lid ± 3	Length ± 2	Width ± 2			
NXT100-12	12	100	90.0	81.0	75.0	75.0	66.0	55.0	45.0	235	235	407	173	32.8	6	600
NXT150-12	12	150	135.0	121.5	112.5	112.5	99.0	82.5	67.5	240	240	557	172	45.8	6	900
NXT200-12	12	200	180.0	162.0	150.0	140.0	132.0	110.0	90.0	240	240	533	250	63.6	5	1200

## CAPACITY RETENTION

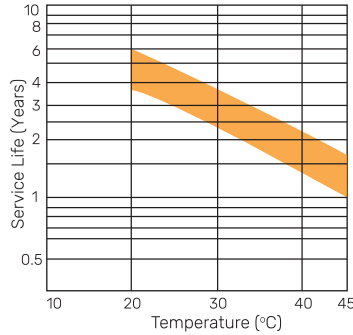
Retention of charge of NXT Series under ideal storage conditions



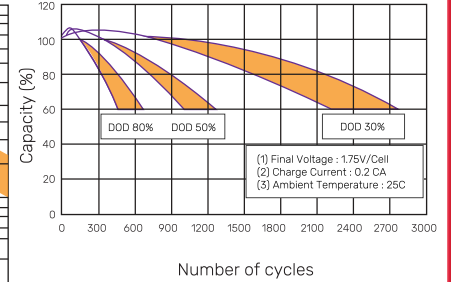
Storage Period (Month)  
Capacity retention characteristic and the supplementary charge and storage guideline

## NXT SERVICE LIFE

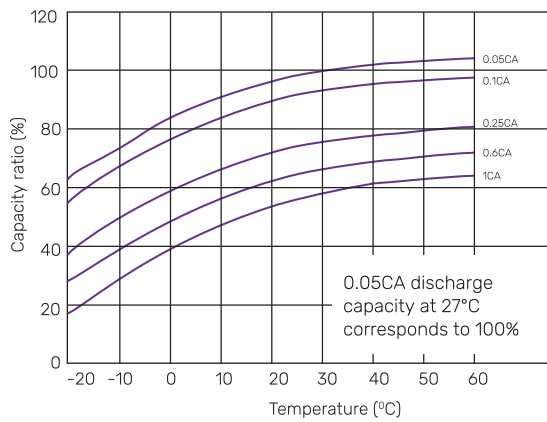
Float Service Life



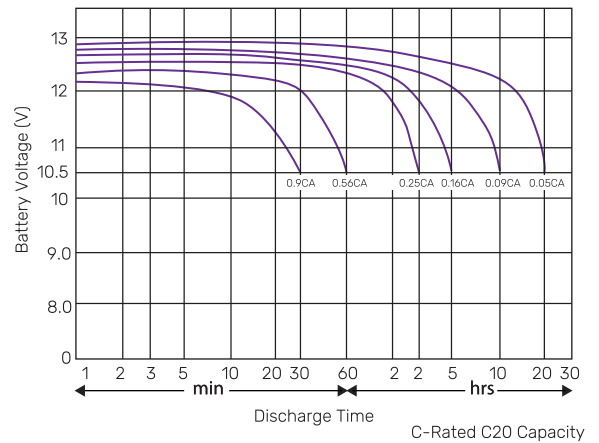
Cycle Service Life



## EFFECT OF TEMPERATURE ON CAPACITY



## NXT DISCHARGE CHARACTERISTICS



Note: Specifications and models subject to change without prior notice

# AGM VRLA EP - SOLAR BATTERY

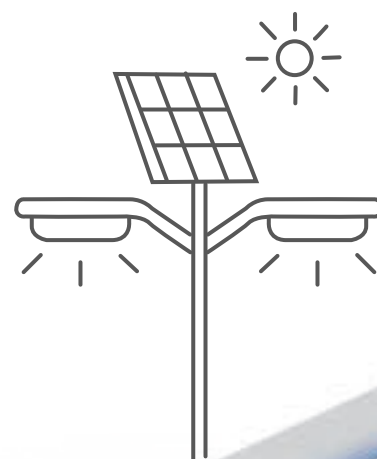
## PRODUCT **FEATURES**

- Sealed Maintenance Free
- Free From Orientation Constraints
- Eco-Friendly
- Minimal Voltage Drop
- Easy Handling
- Easy Installation
- Ready-To-Use
- Good Service Life
- Low Self Discharge
- Charge Retention & Recovery
- Superior High Rate Discharge
- High Reliability

## PRODUCT **BENEFITS**

- Saving of manpower for regular topping up and cleaning corroded terminals as in conventional batteries
- No damage of Flooring by spillage of battery acid or water during maintenance
- Saving of Hundred square feet of costly floor space in metropolitan areas
- Battery can be installed inside offices and working areas – no need for separate battery rooms, costly acid proof flooring etc. Battery can be installed in a cabinet also
- Can be stored for 3 to 6 Months, depending upon ambient temperature before recharge and without any loss of efficiency or performance
- Lower consumption of electricity during use
- Very long shelf life
- Leads to greatly improved ability to recover from deep discharge
- Can deliver the rated performance throughout its service life

Discover the AGM VRLA EP Series-Solar batteries, now available in a powerful range of capacities: 9Ah, 12Ah, 18Ah, 26Ah, 42Ah, 65Ah upto 200Ah



## GENERAL APPLICATION

TYPE OF BATTERY	NOMINAL VOLTAGE(V)	RATED CAPACITY (Ah) AT 27°C						DIMENSION				WEIGHT ±5% (KG)	ENERGY DENSITY (WH/L)	SPECIFIC ENERGY (WH/KG) CHARGED CONDITION	RESISTANCE (MILI-OHM) MAX AT FULLY CHARGED (5 SECS)	MAXIMUM DISCHARGE CURRENT (AMPS.)	CONTAINER/ LID MATERIAL	LAYOUT	TERMINAL
		20HRS 1.75V/ CELL	10HRS 1.75V/ CELL	3HRS 1.75V/ CELL	1.5HRS 1.75V/ CELL	1HRS 1.75V/ CELL	30MINS 1.75V/ CELL	OVERALL HEIGHT (±2)	HEIGHT UPTO LID TOP (±2)	LENGTH (±1)	WIDTH (±1)								
EP 7.5-12	12	7.5	6.9	5.5	5.3	4.5	3.7	100.0	94.0	151.0	65.0	2.40	92.00	37.50	22.00	105.00	ABS	b	F2
EP 9-12	12	9	8.1	6.8	6.4	5.4	4.5	100.0	94.0	151.0	65.0	2.60	110.00	42.00	18.00	135.00	ABS	b	F2
EP 12-12	12	12	11.2	9.0	8.6	7.2	6.0	100.0	94.0	151.0	98.0	3.8	98.0	38.0	16.0	180.0	ABS	c	F2
EP 17-12	12	17	16.0	12.9	12.2	10.2	8.5	167.0	167.0	181.0	76.0	5.0	88.0	41.0	15.0	255.0	ABS	d2	F3
EP 26-12(TP)	12	26	24.0	19.5	18.7	15.6	13.0	175.0	175.0	166.0	125.0	8.8	86.0	35.0	10.0	390.0	TP10	d	F4
EP 26-12(ABS)	12	26	24.0	19.5	18.7	15.6	13.0	179.0	179.0	178.0	124.0	9.2	79.0	34.0	10.0	390.0	ABS	e	F5
EP 32-12	12	32	29.1	24.0	23.0	19.2	16.0	179.0	179.0	178.0	124.0	9.9	97.0	39.0	10.0	480.0	ABS	e	F5
EP 42-12	12	42	38.5	31.5	30.2	25.2	21.0	181.0	181.0	201.0	164.0	13.9	85.0	36.3	8.0	420.0	TP10	f	F6
EP 65-12	12	65	60.0	48.6	46.8	39.0	32.5	181.0	181.0	350.0	166.0	20.2	75.0	38.6	6.0	500.0	TP10	h	F7
EP 75-12	12	75	69.0	56.2	54.0	45.0	37.5	183.0	183.0	391.0	166.0	23.0	80.0	39.0	6.0	500.0	TP10	h	F7
EP 84-12	12	84	91.0	75.0	72.0	60.0	50.0	235.0	235.0	407.0	173.0	32.5	72.0	36.0	6.0	600.0	TP10	h	F8
EP 100-12	12	100	91.0	75.0	72.0	60.0	50.0	235.0	235.0	407.0	173.0	32.5	73.0	37.0	6.0	600.0	TP10	h	F8
EP 120-12	12	120	109.0	90.0	86.4	72.0	60.0	239.0	239.0	452.0	172.0	38.0	77.0	38.0	6.0	600.0	TP10	i	F9
EP 150-12	12	150	136.5	112.5	108.0	90.0	75.0	250.0	250.0	536.0	186.0	48.30	78.00	38.00	5.00	900.00	TP10	i	F9
EP 200-12	12	200	182.0	150.0	144.0	120.0	100.0	250.0	250.0	536.0	250.0	67.20	75.00	36.00	5.00	1200.00	TP10	j	F9

Advantage: International size - Matches dimension of any International equipment. High Rate performance - matches Or better's High Rate performance of equivalent International types.

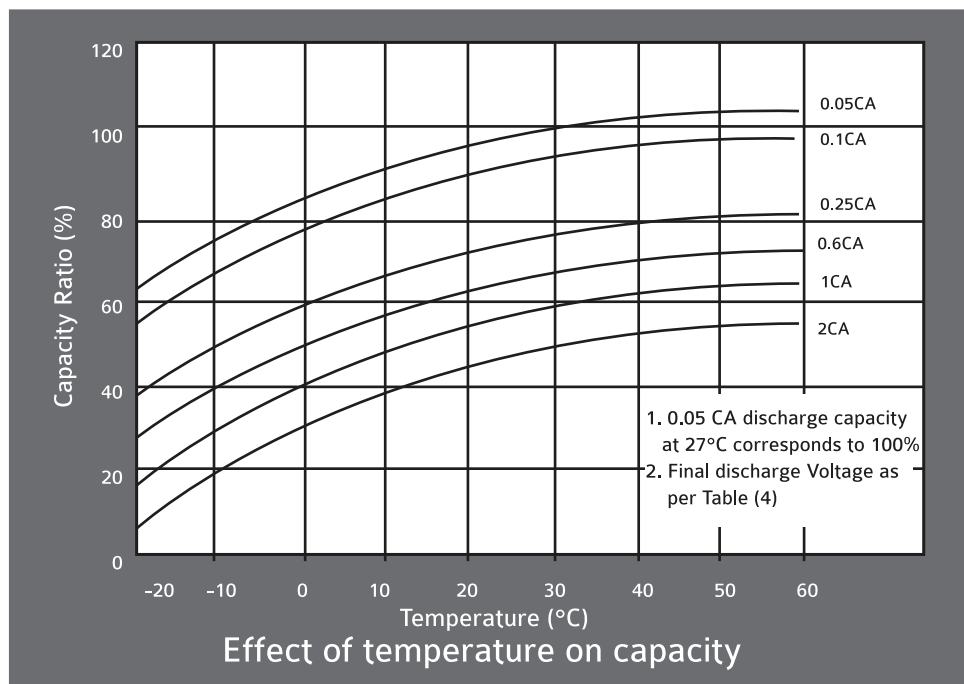
EP RANGE-SOLAR BATTERIES

## DISCHARGE CURRENT AND RECOMMENDED FINAL DISCHARGE VOLTAGE

DISCHARGE CURRENT (A)	FINAL DISCHARGE VOLTAGE (V/CELL)
0.2 C > (A) or intermittent discharge	1.75
0.2 C < or = (A) < 0.5 C	1.70
0.5 C < or = (A) < 1.0 C	1.55
1.0 C < or = (A)	1.30

## EFFECT OF TEMPERATURE ON CAPACITY

This figure represents the relation between the temperature and discharge capacity



Note: Specifications and models subject to change without prior notice

# TANDHAN TALL TUBULAR BATTERY

## PRODUCT DESCRIPTION

Tandhan Power has 2 models of Tall Tubular batteries, namely TPTT200 & TPTT230. These next generation tubular batteries are designed to work smoothly even in high cycle applications involving frequent and prolonged power outage.

## PRODUCT FEATURES

- Resistant to Corrosion
- Improves Battery Life
- Lower Maintenance as Plates are Designed to Prevent Overheating
- Deep Discharge Recovery and Charge Acceptance Characteristics
- High Acid Volumes Help With Lower Maintenance

## PRODUCT SPECIFICATIONS

BATTERY TYPE	NOMINAL VOLT	RATED CAP. Ah @ 27°C C20@1.75VPC	DIMENSIONS (IN MM) HXLXW ±3			GROSS WEIGHT (kg) ±5%	CONSTANT POTENTIAL LIMITING CURRENT AMP	TRICKLE CHARGE (CURRENT IN MA)	
			Height	Length	Width			Min	Max
TPTT200	12	200Ah	421	500	187	67.1	45	180	720
TPTT230		230Ah		500	187	69.72		200	800



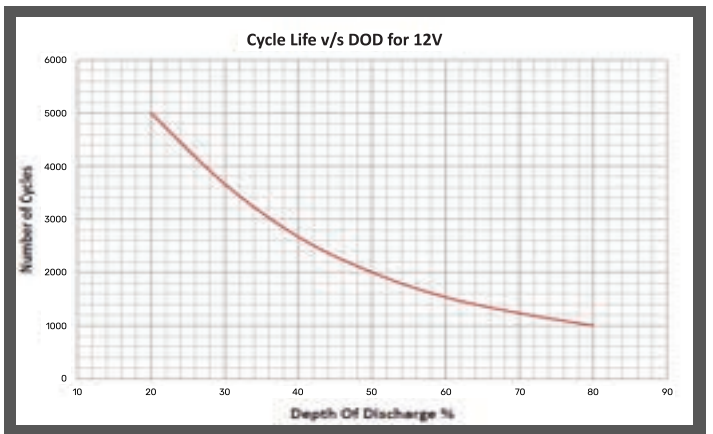
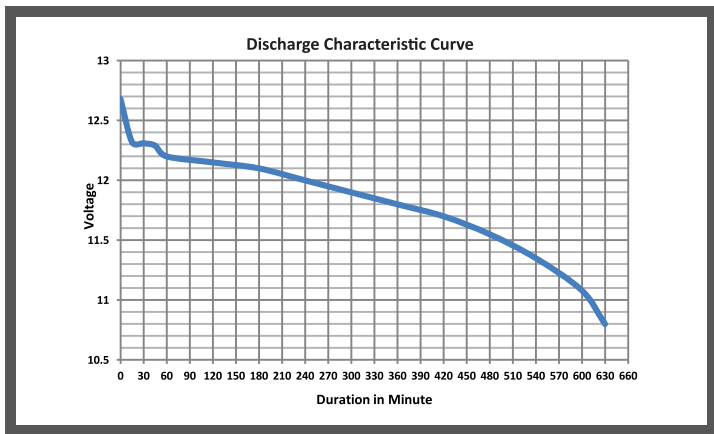
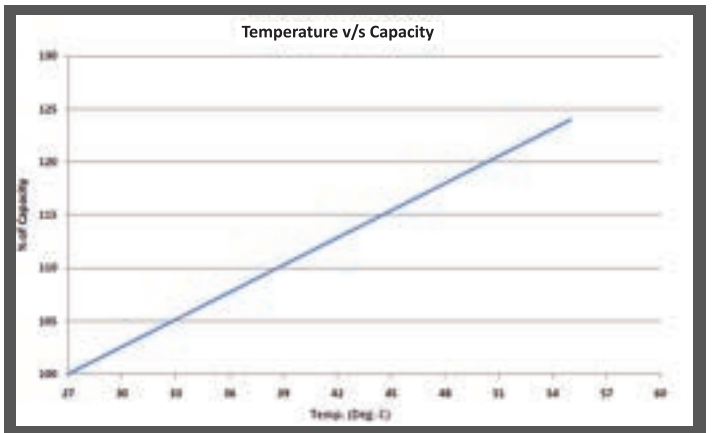
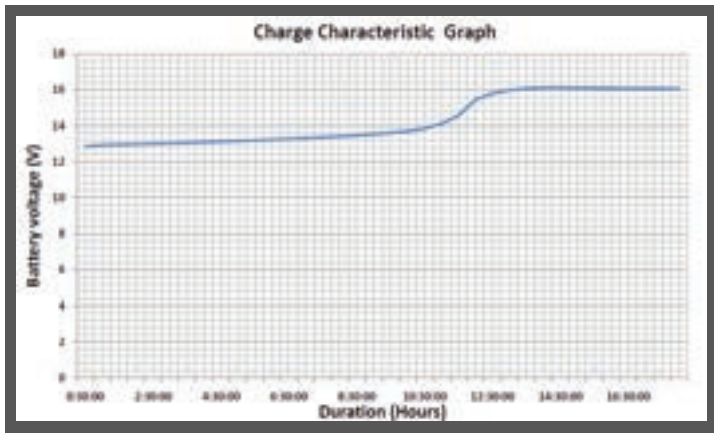
## TECHNICAL DATA SHEET

DESCRIPTION	FLOODED TYPE OF BATTERY	
Model	TPTT200	TPTT230
Capacity	200Ah	230Ah
Nominal Voltage	12Volt	
Declared C20 Capacity at 27 up to 1.75ECV	200	230
Manufacturer's Name	Tandhan Power	
Standard to which battery is manufactured	12V Flooded ranges meets IS13369	
Expected life of battery under normal O&M condition	Design life in ideal float condition 10 years	
Loss in capacity in 28days due to self discharge	<10% per month (As per IS13369)	
Ampere hour Efficiency	>90%	
Watt hours Efficiency	>75%	
INITIAL CHARGING INSTRUCTIONS		
a) Filling in Specific Gravity	1.220±0.005 at 27°C	
b) Rest period	12 hrs.	
c) Constant potential limiting current	45Amps	50Amp.
d) Initial current input (12% of the rated output)	21.6upto 2.35V	24A upto 2.35V
e) Finishing current (6% of the rated output)	10.8A upto 2.75V	12A upto 2.75
f) Specific Gravity at fully charged condition	1.220±0.005 at 27°C	
g) Normal charging instructions	Recharging through inverter at constant potential mode of 14.4 with limited current as specified. After battery potential reaches 14.4V the battery should continue in trickle charge mode at constant potential of 13.5V	
TYPE OF PLATE		
Positive Plates	Tall tubular plates consisting of a lead antimony alloy, optimized for high corrosion resistance. Alloy: lead_Antimony(PbSb)	
Negative Plates	Grid plate construction consisting of lead antimony alloy, Alloy, lead-Antimony (PbSb)	
Type Of Electrolyte	Dilute H <sub>2</sub> SO <sub>4</sub>	
Separators	Microporous & robust PE envelop, for electrical Separation of the positive & negative plates & optimized for low internal resistance	
Type of Vent and Filling Plugs	Microporous - Ceramic	
Material Of Container & Cover	Polypropylene - Cermic	
Sealing Method	Heat Sealed	
Recommended Storage life of Battery ( Dry Shelf Life)	6 Months	
Operating temp. range	-20° C to +55°C	
OCV t 100% SOC	>12.5 Volt / Battery	
Allowable charging current	0.15C Charging	

**NO. OF CHARGE-DISCHARGE CYCLE BATTERY CAN GIVE DURING ITS ENTIRE LIFE**

@20% DOD	5000 cycles
@50% DOD	2000 cycles
@80% DOD	1000 cycles

**CHARACTERISTICS CURVES**



## TALL TUBULAR BATTERY

### PRODUCT DESCRIPTION

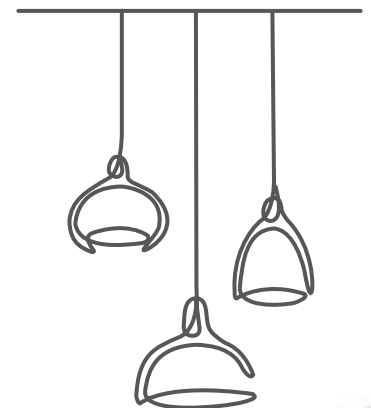
Tandhan Power Robust has 4 models of Tall Tubular batteries, namely TPTT115, TPTT150, TPTT200, & TPTT230. These next-generation tubular batteries are designed to work smoothly even in high cycle applications involving frequent and prolonged power outage.

### PRODUCT FEATURES

- Resistant to Corrosion
- Improves Battery Life
- Lower Maintenance as Plates are Designed to Prevent Overheating
- Deep Discharge Recovery and Charge Acceptance Characteristics
- High Acid Volumes Help With Lower Maintenance

### PRODUCT SPECIFICATIONS

BATTERY TYPE	NOMINAL VOLT	RATED CAP. Ah @ 27°C C20@1.75VPC	DIMENSIONS (IN MM) HXLXW ±5			GROSS WEIGHT (kg) ±5%	CONSTANT POTENTIAL LIMITING CURRENT AMP	TRICKLE CHARGE (CURRENT IN MA)	
			Height	Length	Width			Min	Max
TPTT115	12	115Ah	290	533	220	55	25	100	400
TPTT150		150Ah							
TPTT200		200Ah	421	500	187	66	45	180	720
TPTT230		230Ah							

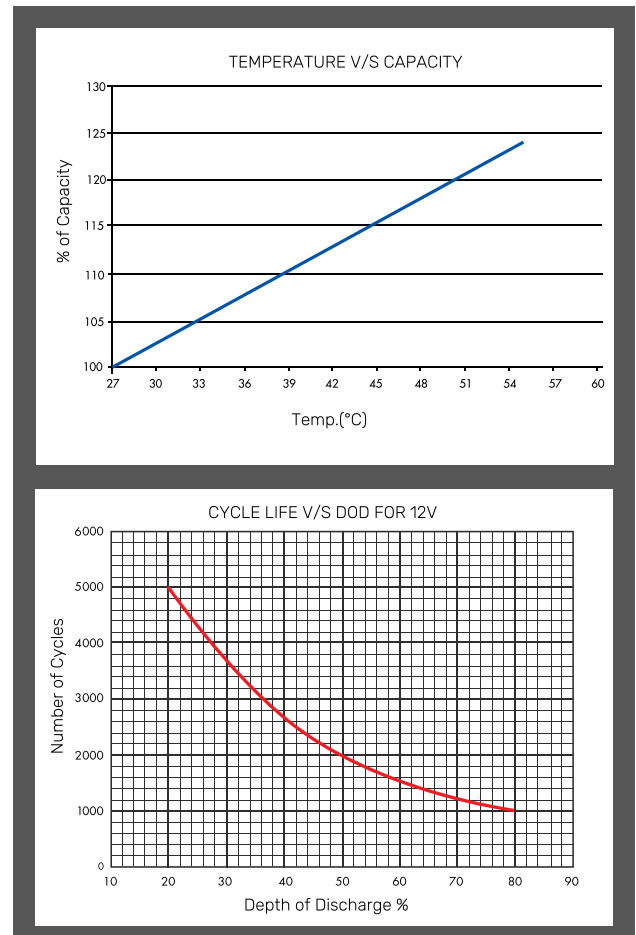
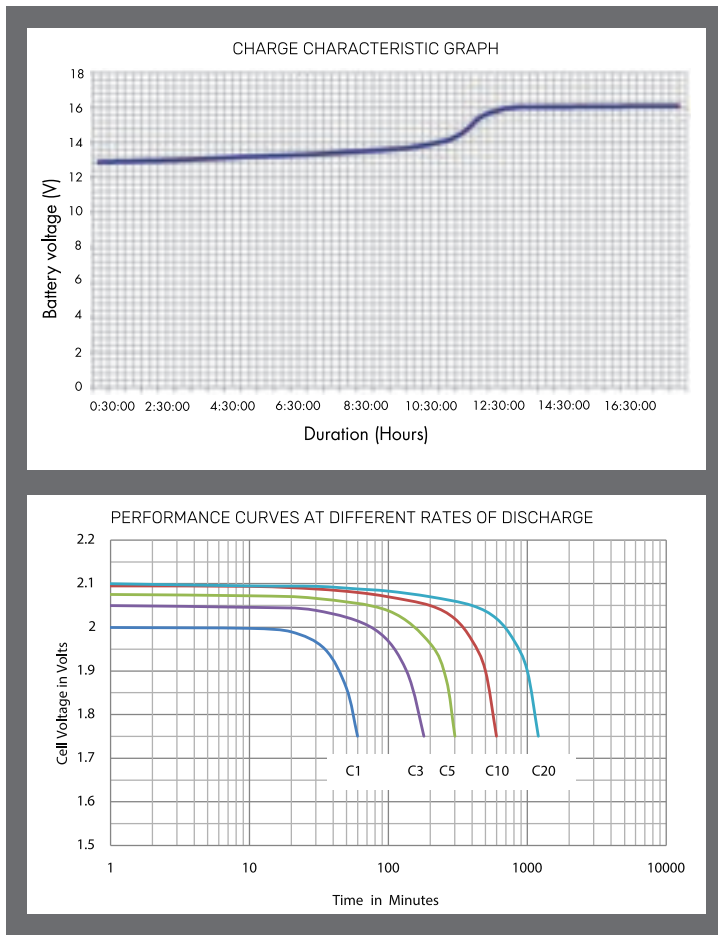


## TECHNICAL DATA SHEET

DESCRIPTION	FLOODED TYPE OF BATTERY			
	TPTT115	TPTT150	TPTT200	TPTT230
Model				
Capacity	115Ah	150Ah	200Ah	230Ah
Nominal Voltage	12Volt			
Declared C20 Capacity at 27 up to 1.75ECV	115	150	200	230
Manufacturer's Name	Tandhan Power			
Standard to which battery is manufactured	12V Flooded ranges meets IS13369			
Expected life of battery under normal O&M condition	Design life in ideal float condition 10 years			
Loss in capacity in 28days due to self discharge	<1% per month (As per IS13369)			
Ampere hour Efficiency	>90%			
Watt hours Efficiency	>75%			
INITIAL CHARGING INSTRUCTIONS				
a) Filling in Specific Gravity	1.220±0.005 at 27°C			
b) Rest period	12hrs			
c) Constant potential limiting current	25Amps.	32.5Amps.	45Amps	50Amp.
d) Initial current input (12% of the rated output)	12A upto 2.35V	16A upto 2.35V	21.6upto 2.35V	24A upto 2.35V
e) Finishing current (6% of the rated output)	6A upto 2.75V	8.0A upto 2.75V	10.8A upto 2.75V	12A upto 2.75
f) Specific Gravity at fully charged condition	1.220±0.005 at 27°C			
g) Normal charging instructions	Recharging through inverter at constant potential mode of 14.4 with limited current as specified. After battery potential reaches 14.4V the battery should continue in trickle charge mode at constant potential of 13.5V			
TYPE OF PLATE				
Positive Plates	Robust tubular plates consisting of a lead antimony alloy, optimized for high corrosion resistance. Alloy: lead_Antimony(PbSb)			
Negative Plates	Grid plate construction consisting of lead antimony alloy, Alloy, lead-Antimony (PbSb)			
Type of Electrolyte	Dilute H <sub>2</sub> SO <sub>4</sub>			
Separators	Microporous & robust PE envelop, for electrical Separation of the positive & negative plates & optimized for low internal resistance			
Type of vent and filling Plugs	Microporous - Ceramic			
Material of Container & Cover	Polypropylene - Cermic			
Sealing Method	Heat Selaed			
Recommended Storage life of Battery ( Dry Shelf Life)	6 Months			
Operation temp. range	-20°C to +55°C			
OCV t 100% SOC	>12.5 Volt / Battery			
Allowable charging current	0.15C Charging			

NO. OF CHARGE-DISCHARGE CYCLE BATTERY CAN GIVE DURING ITS ENTIRE LIFE	
@20% DOD	5000 cycles
@50% DOD	2000 cycles
@80% DOD	1000 cycles

## CHARACTERISTICS CURVES



Technical specifications are subject to change without prior notice.

Battery image shown is indicative and may vary from the actual

## TALL TUBULAR BATTERY

### PRODUCT DESCRIPTION

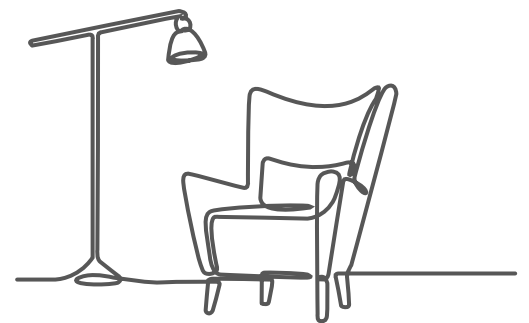
Tandhan Power Royal has 3 models of Tall Tubular batteries, namely TPR200TT, TPR220TT, TPR230TT. These next-generation tubular batteries are designed to deliver satisfactory performance every time, with long and durable battery life.

### PRODUCT FEATURES

- Lower Maintenance as Plates are Designed to Prevent Overheating
- Low Antimonial Alloy Battery Operates Consistently Even at High Temperature
- Resistance to Corrosion Improves Battery Life
- Clear Electrolyte Level Indicator

### PRODUCT SPECIFICATIONS

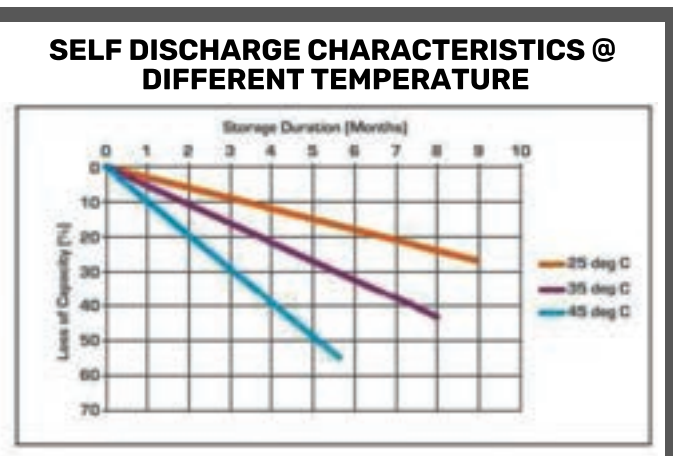
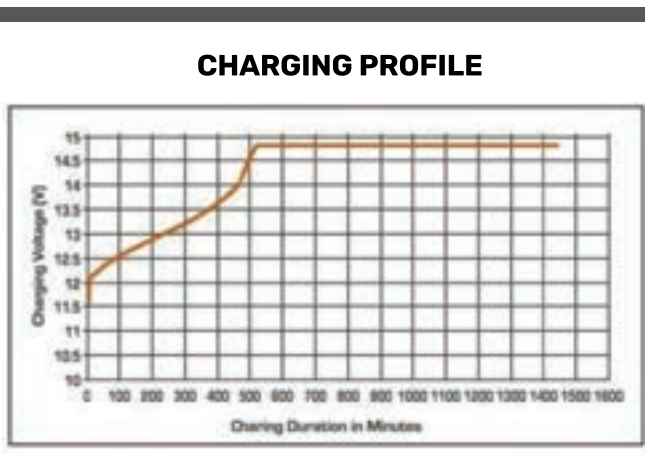
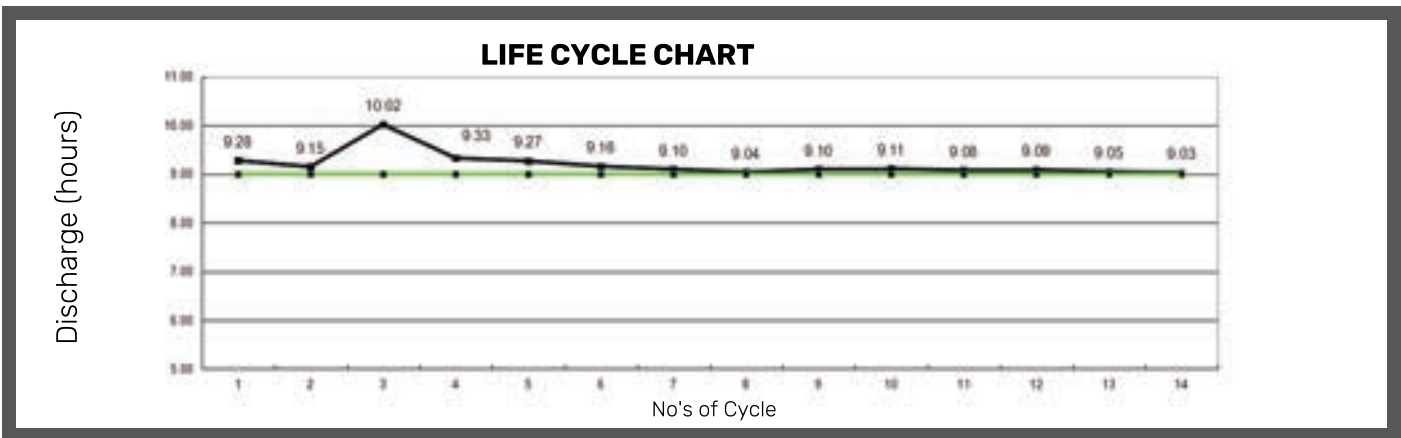
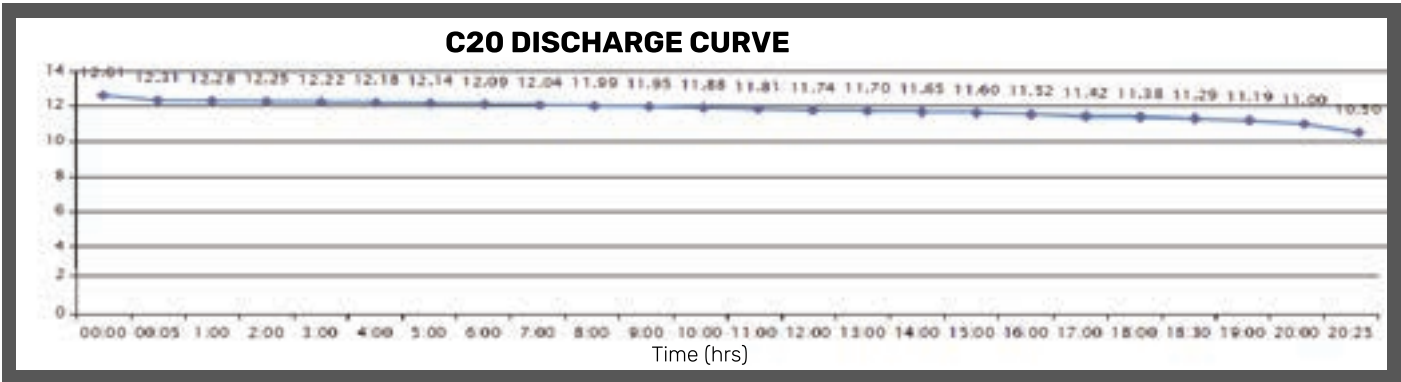
BATTERY TYPE	NOMINAL VOLT	RATED CAP. Ah @ 27°C C20@1.75VPC	DIMENSIONS (IN MM) HXLXW ±5			GROSS WEIGHT (kg) ±5%	CONSTANT POTENTIAL LIMITING CURRENT AMP	TRICKLE CHARGE (CURRENT IN MA)	
			Height	Length	Width			Min	Max
TPR200TT	12	200Ah	408	503	185	63	31	100	400
TPR220TT		220Ah	402	502	188	65	43	130	520
TPR230TT		230Ah				67	48	180	720



## TECHNICAL DATA SHEET

DESCRIPTION	FLOODED TYPE OF BATTERY		
	TPR200TT	TPR220TT	TPR230TT
<b>Model</b>			
Rated Capacity	200Ah	220Ah	230Ah
Nominal Voltage per Unit	12Volt		
Declared C20 Capacity at 27 up to 1.75ECV	200	220	230
Manufacturer's Name	Tandhan Power		
Standard to which battery is manufactured	12V Flooded ranges meets IS13369		
Loss in capacity in 28 days due to self discharge	<1% per month (As per IS13369)		
Ampere hour Efficiency	>90%		
Watt hours Efficiency	>75%		
INITIAL CHARGING INSTRUCTIONS			
a) Filling in Specific Gravity	1.220±0.005 at 27°C		
b) Rest period	12Hrs		
c) Specific Gravity at fully charged condition	1.220±0.005 at 27°C		
d) Normal charging instructions	Recharging through inverter at constant potential mode of 14.4 with limited current as specified. After battery potential reaches 14.4V the battery should continue in trickle charge mode at constant potential of 13.5V		
e) Self Discharge	Lead Storage batteries can be stored for 3 months at 27°C, Self-discharge ratio less than 5% per month at 27°C. Please charge battery before use.		
TYPE OF PLATE			
Positive Plates	Royal tubular plates consisting of a lead antimony alloy, optimized for high corrosion resistance. Alloy: lead_Antimony(PbSb)		
Negative Plates	Grid plate construction consisting of lead antimony alloy, Alloy, lead-Antimony (PbSb)		
Type of Electrolyte	Dilute H <sub>2</sub> SO <sub>4</sub>		
Separators	Microporous & robust PE envelop, for electrical Separation of the positive & negative plates & optimized for low internal resistance		
Type of vent and filling Plugs	Microporous - Ceramic		
Material of Container & Cover	Polypropylene Copolymer (PPCP)		
Sealing Method	Heat Selaed		
Recommended Storage life of Battery (Dry Shelf Life)	6 Months		
Operation temp. Range	Discharge 5° C to +50°C		
	Charge 5° C to +50°C		
	Storage 5° C to +50°C		
Normal Operation temp. Range	27±2°C		
Equilozation and Cycle Service	14.6 to 14.8 VDC/unit Average at 27°C		
Recommended Maximum Charging Current	10% of Battery Rated Capacity		

NO. OF CHARGE-DISCHARGE CYCLE BATTERY CAN GIVE DURING ITS ENTIRE LIFE	
@20% DOD	2500 Cycles
@50% DOD	1800 Cycles
@80% DOD	1500 Cycles





## TALL TUBULAR BATTERY

### PRODUCT DESCRIPTION

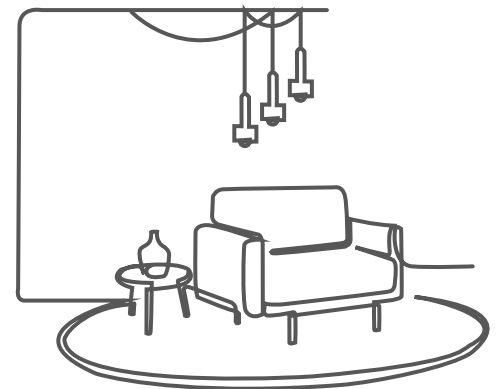
Tandhan Power Jewel Range of Tall Tubular batteries, namely TPJ200TT and TPJ220TT are customized exclusively for Home UPS/Inverter Application. These batteries represents an assortment of Tubular Home UPS/Inverter batteries that are high on Technology, Performance and Service Quality.

### PRODUCT FEATURES

- Longer Cycle Life
- Low Self Discharge Rate
- Efficient Deep Discharge Recovery
- Wide Operating Temperature Range

### PRODUCT SPECIFICATIONS

BATTERY TYPE	NOMINAL VOLT	RATED CAP. Ah @ 27°C C20@1.75VPC	DIMENSIONS (IN MM) HXLXW ±3			GROSS WEIGHT (kg) ±5%	CONSTANT POTENTIAL LIMITING CURRENT AMP	TRICKLE CHARGE (CURRENT IN MA)	
			Height	Length	Width			Min	Max
TPJ200TT	DC 12	200Ah	410	505	190	60	32.5	100	400
TPJ220TT		220Ah	402	502	188	63	45	130	520

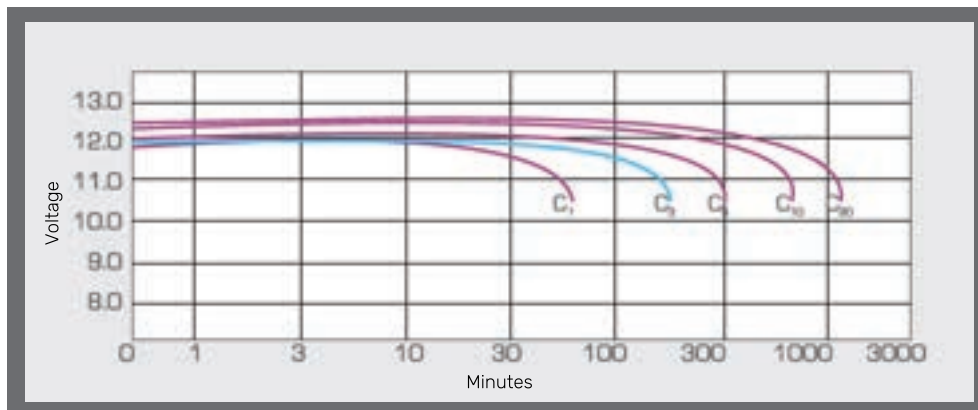


## TECHNICAL DATA SHEET

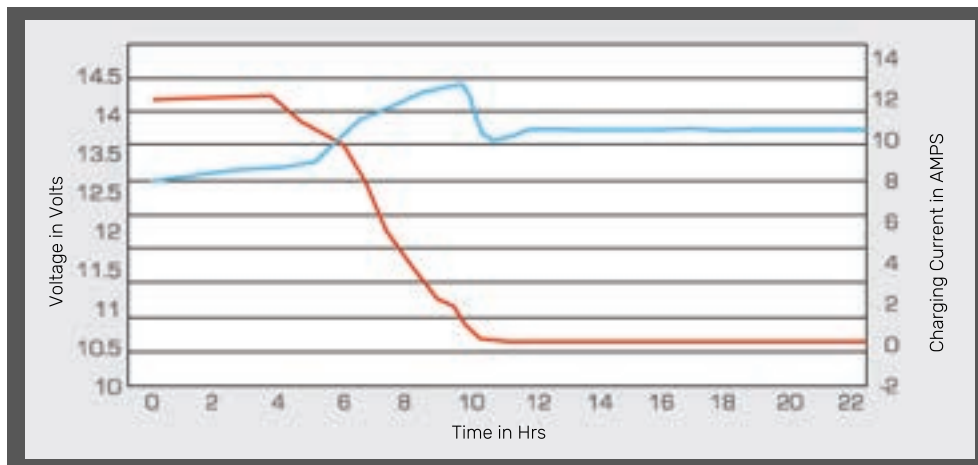
DESCRIPTION	FLOODED TYPE OF BATTERY	
<b>Model</b>	<b>TPJ200TT</b>	<b>TPJ220TT</b>
Rated Capacity	200Ah	220Ah
Nominal Voltage per Unit	<b>12Volt</b>	
Declared C20 Capacity at 27 up to 1.75ECV	200	220
Manufacturer's Name	<b>Tandhan Power</b>	
Standard to which battery is manufactured	12V Flooded ranges meets IS13369	
Loss in capacity in 28days due to self discharge	<3% per month (As per IS13369)	
Ampere hour Efficiency	>90%	
Watt hours Efficiency	>75%	
INITIAL CHARGING INSTRUCTIONS		
a) Filling in Specific Gravity	1.220±0.005 at 27°C	
b) Rest period	12Hrs	
c) Specific Gravity at fully charged condition	1.220±0.005 at 27°C	
d) Normal charging instructions	Recharging through inverter at constant potential mode of 14.4 with limited current as specified. After battery potential reaches 14.4V the battery should continue in trickle charge mode at constant potential of 13.5V	
e) Self Discharge	Lead Storage batteries can be stored for 3 months at 27°C, Self-discharge ratio less then 3% per month at 27°C. Please charge battery before use.	
TYPE OF PLATE		
Positive Plates	Jewel tubular plates consisting of a lead antimony alloy, optimized for high corrosion resistance. Alloy: lead_Antimony(PbSb)	
Negative Plates	Grid plate construction consisting of lead antimony alloy, Alloy, lead-Antimony (PbSb)	
Type Of Electrolyte	Dilute H <sub>2</sub> SO <sub>4</sub>	
Separators	Microporous & Robust PE envelop, for electrical Separation of the positive & negative plates & optimized for low internal resistance	
Type of vent and filling Plugs	Microporous - Ceramic	
Material of Container & Cover	Polypropylene Copolymer (PPCP)	
Sealing Method	Heat Selaed	
Recommended Storage life of Battery (Dry Shelf Life)	6 Months	
Operation temp. range	-20°C to +55°C	
Equilozation and Cycle Service	14.6 to 14.8 VDC/unit Average at 27°C	
Recommended Maximum Charging Current	20Amp	22Amp

NO. OF CHARGE-DISCHARGE CYCLE BATTERY CAN GIVE DURING ITS ENTIRE LIFE	
@50% DOD	2200 Cycles
@80% DOD	1250 Cycles
@100% DOD	1000 Cycles

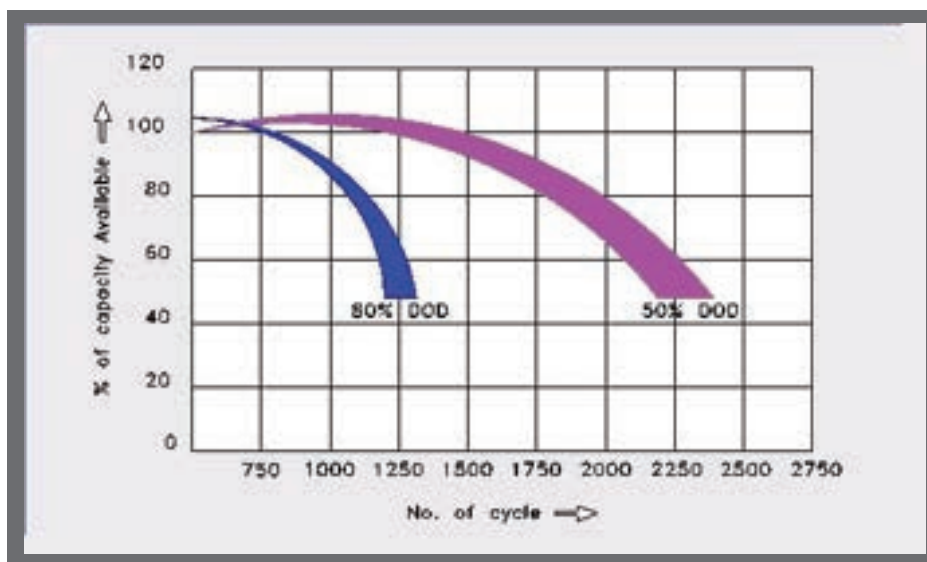
**DISCHARGING CHARACTERISTICS AT VARIOUS RATES @ 27°C**



**CHARGING CHARACTERISTICS**



**EXPECTED LIFE @ 27°C**



# TANDHAN GEL TUBULAR BATTERY

## PRODUCT DESCRIPTION

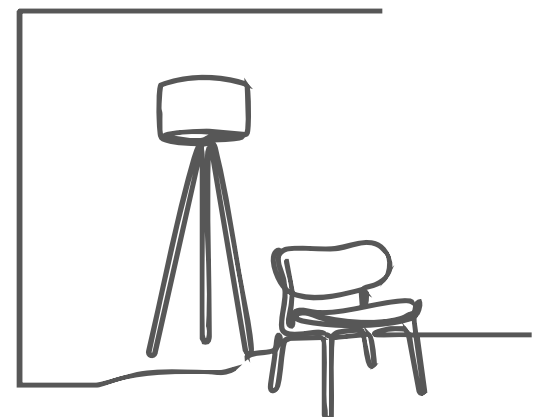
Tandhan Power Gel battery is entirely maintenance-free and has no gas formation with normal use. As no extra ventilation is required, gel batteries can be installed anywhere.

## PRODUCT FEATURES

- Longer Cycle Life
- Lower Self Discharge Rate
- Efficient Deep Discharge Recovery
- Wide Operating Temperature Range

## PRODUCT SPECIFICATIONS

BATTERY TYPE	NOMINAL VOLT	RATED CAP. Ah @ 27°C C20@1.75VPC	DIMENSIONS (IN MM) HXLXW ±5			GROSS WEIGHT (kg) ±5%	MAXIMUM DISCHARGE CURRENT
			Height	Length	Width		
TPGT100	12	100Ah	258	531	170	47	600
TPGT150		150Ah	240	533	250	64	900
TPGT200		200Ah	402	428	287	84	1200



Range 200Ah



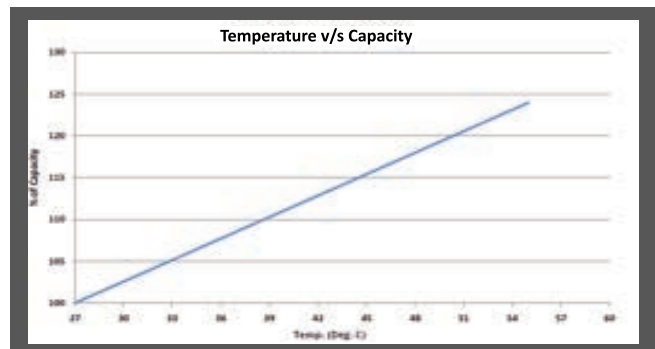
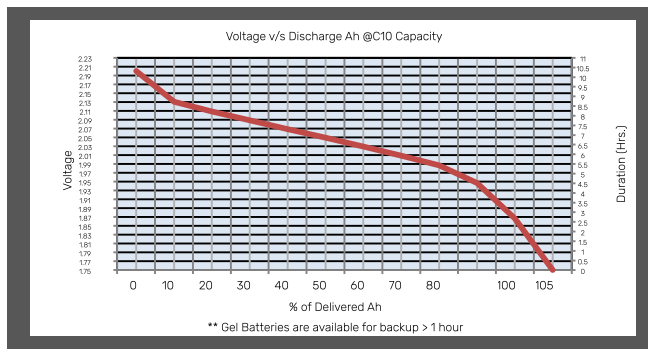
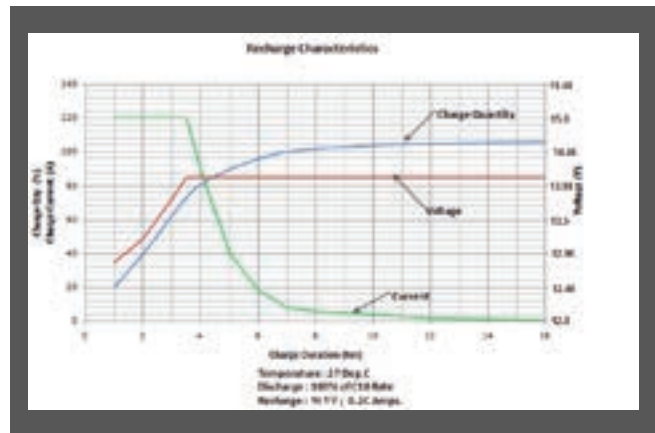
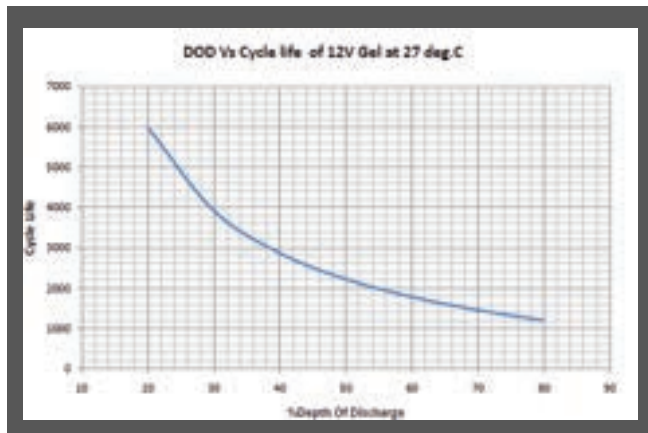
Range 100Ah to 150Ah

## TECHNICAL DATA SHEET

DESCRIPTION	GEL TYPE OF BATTERY		
	TPGT100	TPGT150	TPGT200
<b>Model</b>			
Rated Capacity	100Ah	150Ah	200Ah
Nominal Voltage per Unit	12Volt		
Declared C10 Capacity at 27 up to 1.75ECV	100	150	200
Manufacturer's Name	Tandhan Power		
Standard to which battery is manufactured	12V Gel ranges meets IS15549, IEC 60896-21 & 22		
Expected life of battery under normal O&M condition	Design life in ideal float condition 10 years		
Loss in capacity in 28days due to self discahrge	<5% per month		
Ampere hour Efficiency	>95%		
Watt hours Efficiency	>85%		
<b>RECOMMENDED RE- CHARGING RATE DURING OPERATION AT 27°C-30°C</b>			
a) Bulk Voltage	14.7 ± 0.1V		
b) Float Voltage	13.7 ± 0.1V		
c) Low Voltage Disconnect	11.4 ± 0.1V		
<b>TYPE OF PLATE</b>			
Positive Plates	Robust tubular plates consisting of a lead calcium alloy, optimized for high corrosion resistance. Purity of lead-99.9 Alloy: lead Tin- Calcium (PbSnCa)		
Negative Plates	Grid plate construction consisting of lead Calcium alloy, Alloy, lead-Calcium (PbCa)		
Type of Electrolyte	Gelled H <sub>2</sub> SO <sub>4</sub>		
Separators	Microporous & robust PVC Silica, for electrical Separation of the positive & negative plates & optimized for low internal resistance		
Type of vent and filling Plugs	Self sealing vent valves		
Material of Container & Cover	Polypropylene Copolymer (PPCP)		
Sealing Method	Heat Selaed		
Recommended Storage life of Battery ( Dry Shelf Life)	6 Months		
Operation temp. range	-20°C to +55°C		
OCV at 100% SOC	>12.9Volt/battery		
Allowable Charging current	0.2C charging		

NO. OF CHARGE-DISCHARGE CYCLE BATTERY CAN GIVE DURING ITS ENTIRE LIFE	
@20% DOD	6000 Cycles
@50% DOD	2200 Cycles
@80% DOD	1200 Cycles

## CHARACTERISTICS CURVES



# PHOTONIC

## C10 Solar Battery

### PRODUCT DESCRIPTION

Tandhan Photonic range of Tubular Batteries are customized exclusively for Solar Application. Tandhan Photonic represents an assortment of Tubular Batteries that is Performance and Service Quality.

### PRODUCT FEATURES

- Longer Cycle Life
- Low Self Discharge Rate
- Efficient Deep Discharge Recovery
- Wide Operating Temperature Range
- Highest Purity Electrolyte
- NAM with Active Carbon
- High Grade Imported Separator
- Ceramic Vent Plugs
- Plate Technology

### PRODUCT SPECIFICATIONS

BATTERY TYPE	NOMINAL VOLT	RATED CAP. Ah @ 27°C C20@1.75VPC	DIMENSIONS (IN MM) HXLXW ±2			GROSS WEIGHT
Model	DC		Height	Length	Width	(kg) ±3%
TPSP200	12	200Ah	410	505	188	63.5



### BATTERY SPECIFIED CAPACITY TEST @ 27°C

C10@10.8V	C5@10.8V	C3@10.8V	C2@10.8V	C1@10.8V
200	166.5	143	126.5	100

### AH & WH EFFICIENCY

Ah Efficiency	>93%	Wh Efficiency	>80%
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### CHARGING METHOD (CC/CV)

Max Current	30A
Cyclic Use	14.5V
Float Use	13.8V

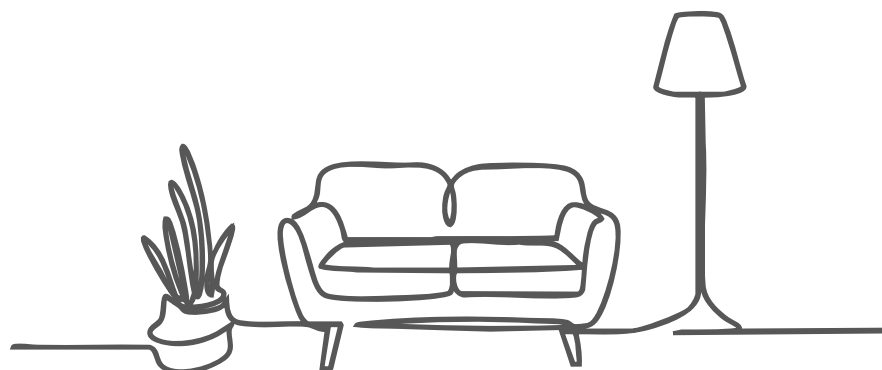
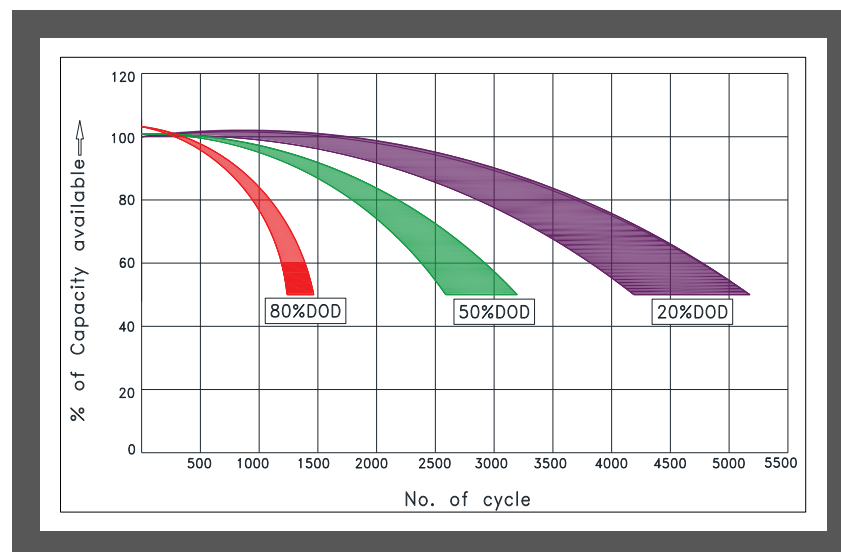
### CAPACITY LOSS ON STORAGE

5% Per Month

### CHARGING TEMPERATURE COMPENSATION

ADD	SUBTRACT
0.005 volt per cell for every 1°C below 25°C 0.0028 volt per cell for every 1°F below 77°F	0.005 volt per cell for every 1°C above 25°C 0.0028 volt per cell for every 1°F above 77°F

### EXPECTED LIFE @ 27°C



# **BOLTRONZ**

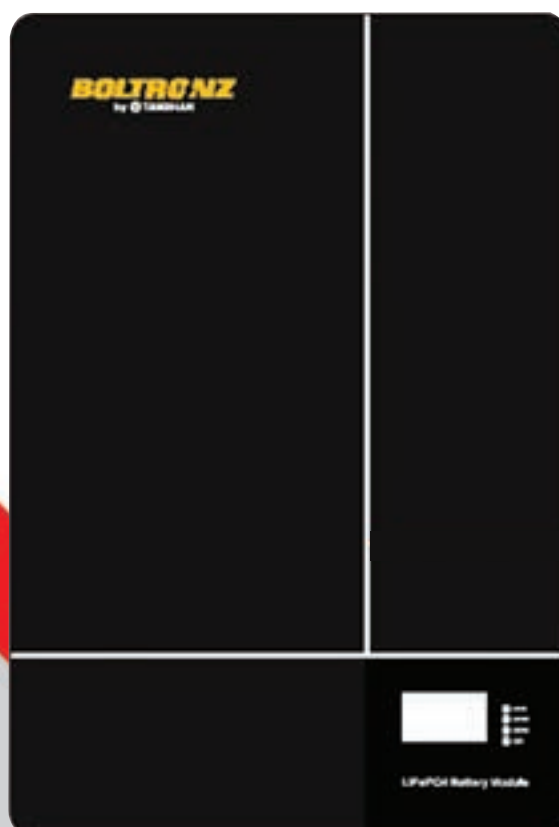
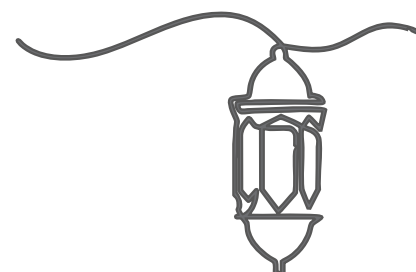
## LITHIUM ION BATTERY

### **PRODUCT DESCRIPTION**

The Boltronz Series offers a versatile and reliable power solution. Combine up to 15 units for energy capacities ranging from 2560Wh to 10240Wh. With WiFi Remote Monitoring, stay connected and in control. Whether it's wall-mounted convenience, stacked-mounting (up to 5 units) for space efficiency, or rack-mounted for industrial power management, this series offers seamless adaptability.

### **PRODUCT FEATURES**

- 3-in-1 Wall-mounted, Stacked-mounted, Rack-mounted (optional)
- Large capacity, high power output
- Safest lithium iron phosphate battery cell with high energy density
- Modular design: supports up to 15 units in parallel
- IP21 protection for indoor use: Wall-mounted, Stacked-mounted, Rack-mounted (optional)
- Support CAN & RS485 communication with mainstream inverters
- Local monitoring via LCD monitor
- Built-in WiFi Smart BMS Module



RANGE - BLB 24100, BLB 24200,  
BLB 48100 & BLB 48200

## PRODUCT SPECIFICATIONS

TECHNICAL DATA		BLB-24100	BLB-24200	BLB-48100	BLB-48200
Nominal Voltage		25.6V		51.2V	
Nominal Capacity		100Ah	200Ah	100Ah	200Ah
Nominal Energy		2560Wh	5120Wh	5120Wh	10240Wh
Life Cycles		6000 cycles @ 80% DOD, 25°C			
Recommended Charge Voltage		29.2V		58.4V	
Recommended Charge Current 20A 40A		20A	40A	20A	40A
End Of Discharge Voltage		22V		44V	
Standard Method	Charge	20A	40A	20A	40A
	Discharge	50A	100A	50A	100A
Maximum Continuous Current	Charge	100A	150A	100A	150A
	Discharge	100A	150A	100A	150A
BMS Cut-Off Voltage	Charge	29.2 V (3.65V/Cell)		58.4 V (3.65V/Cell)	
	Discharge	22.0V (2s) (2.75V/Cell)		44.0V (2.75V/Cell)	
Temperature	Charge	0 ~ 45°C			
	Discharge	-10 ~ 55°C			
Storage Temperature		-5~35°C			
Shipment Voltage		≥25.6V		≥51.2V	
Module Paralle		Up to 15 units			
Communication		CAN2.0/RS232/RS485			
Case Material		SPPC			
Machine Dimension (H*W*D) (mm)		485.5*442*177	486.5*442*250	625.5*442*177	686.5*442*250
Package Dimension (W*H*D) (mm)	Carton box	557*547*227	557*547*300	688*557*227	non
	Wooden box	555*565*340	555*565*410	696*565*335	759*569*391
N.W (kg)		27	44	45	80
G.W (kg)	Carton box	30	48	48	non
	Wooden box	40	57	58	97
<b>* VARIATIONS IN DIMENSIONS AND WEIGHTS MAY OCCUR DUE TO PRODUCTION BATCHES.</b>					
Charge Retention And Capacity Recovery Capability		Standard charge the battery, and then put aside at room temperature for 28d or 55°C for 7d. Charge retention rate≥90%. Recovery rate of charge≥90			
Certification & Standards		CE-EMC (EN 61000-6-3: 2007+A1: 2011+AC: 2012 EN IEC 61000-6-1: 2019) IEC62619-1:2018; IEC62619:2022; IEC62619:2017; UN38.3/ MSDS			

# BOLTRONZ

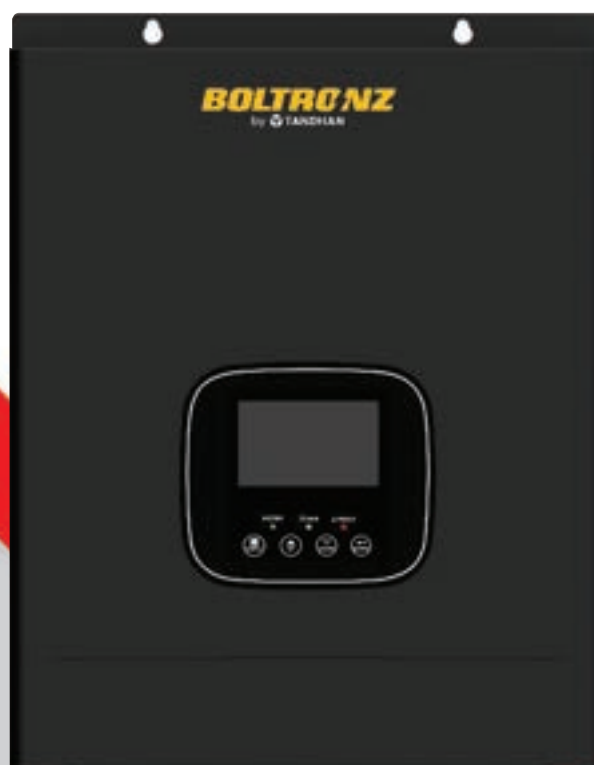
## HIGH FREQUENCY SOLAR INVERTER ECO SERIES

### PRODUCT DESCRIPTION

BHF18 ECO is a multi-function inverter/charger, combining functions of inverter, MPPT solar charger, and battery charger to offer uninterruptible power support in a portable size. The BHF18 ECO Series can run without a battery. The Maximum PV input voltage can reach 400V/450V/500V, which can help customers make full use of solar energy. (For 2.0~6.2KW)

### PRODUCT FEATURES

- Pure Sine Wave output
- Smart LCD setting (Working modes, Charge Current, Charge Voltage, etc)
- Built-in MPPT solar charge controller
- Wide PV input voltage range
- Can provide the power to the load without battery
- Combining solar system, AC utility, and battery power source to supply continuous power
- Cold start function
- Support RS485, CAN monitoring function
- Dual outputs for smart load management
- Can communicate with lithium batteries (CAN port)



Range - BHF18ECO1612,  
BHF18ECO2524,  
BHF18ECO3024,  
BHF18ECO3524,  
BHF18ECO5548, and  
BHF18ECO6248

## PRODUCT SPECIFICATIONS

### BHF18 SOLAR INVERTER ECO SERIES

Model	BHF18 EC02012	BHF18 EC02524	BHF18 EC03024	BHF18 EC04024	BHF18 EC05548	BHF18 EC06248
Default Battery System Voltage	12VDC	24VDC			48VDC	

### INVERTER OUTPUT

Rated Power	2000VA / 2000W	2500VA / 2500W	3000VA / 3000W	4000VA / 4000W	5500VA / 5500W	6000VA / 6000W
Output Channel	Dual	Dual	Dual	Dual	Dual	Dual
Surge Power	3200W	5000W	6000W	7000W	11000W	12400W
Waveform	Pure Sine Wave					
AC Voltage Regulation (Batt.Mode)	230VAC±5%(Setting)					
Inverter Efficiency (Peak)	>90%					
Transfer Time	10ms(UPS / VDE4105) / 20ms(APL)					

### AC INPUT

Voltage	230VAC					
Selectable Voltage Range	170~280VAC(UPS) / 90~280VAC(APL) / 184~253VAC(VDE)					
Frequency Range	50Hz / 60Hz (Auto sensing)					

### BATTERY

Normal Voltage	12VDC	24VDC	24VDC	24VDC	48VDC	48VDC
Floating Charge Voltage	13.7VDC	27.4VDC	27.4VDC	27.4VDC	54.8VDC	54.8VDC
Overcharge Protection	15VDC	30VDC	30VDC	30VDC	60VDC	60VDC

### SOLAR CHARGER & AC CHARGER

Maximum PV Array Open Circuit Voltage	400VDC	400VDC	400VDC	450VDC	450VDC	500VDC
Charging Algorithm	3-Step (Flooded Battery, AGM / GEL / LEAD Battery), 4-Step (Li)					
Maximum PV Array Power	2000W	4000W	4000W	4000W	6000W	6200W
PV Array MPPT Voltage Range	30~320VDC	30~320VDC	30~320VDC	60~360VDC	60~360VDC	120~450VDC
PV Maximum Input Current	16A	18A	18A	18A	28A	28A
Maximum Solar Charge Current	80A	100A	100A	100A	100A	120A
Maximum AC Charge Current	80A	60A	60A	60A	100A	100A
Maximum Charge Current	80A	100A	100A	100A	100A	120A

### MECHANICAL SPECIFICATIONS

Machine Dimension (W*H*D)(mm)	290*367*111	290*367*111	290*367*111	318*367*122.5	318*454*122.5	318*428*140
Package Dimension (W*H*D)(mm) / /	446*394*187	446*394*187	446*394*187	446*410*200	544.5*410*210	550*400*220
N.W (kg) / /	6.4	6.7	6.7	7.3	9	10
G.W (kg) / /	7.4	7.7	7.7	8.3	10.5	11.6

### OTHER

Humidity	5% to 95% Relativ Humidity (Non-condensing)					
Operating Temperature	0°C~50°C					
Storage Temperature	-15°C ~60°C					
Warranty	2years					

### CERTIFICATION & STANDARDS

CE

\*The technical specifications of this document are subject to change without any notice

# BOLTRONZ

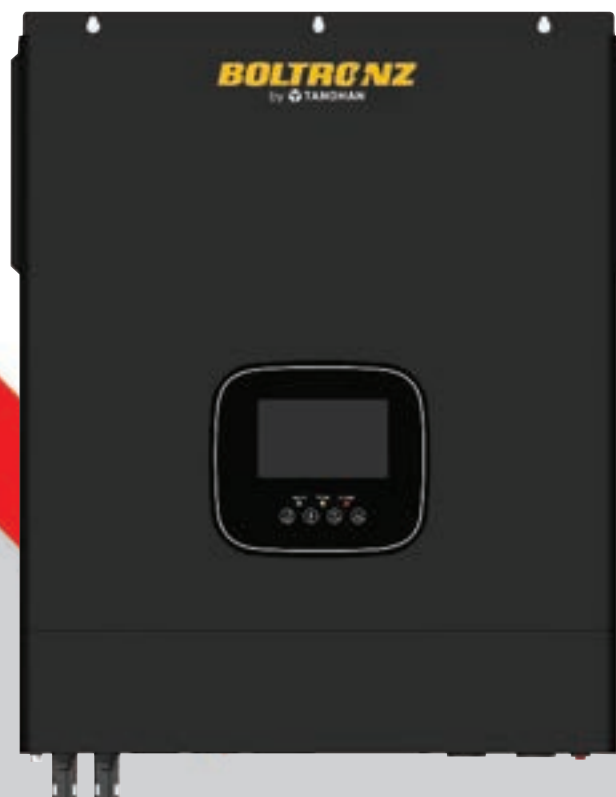
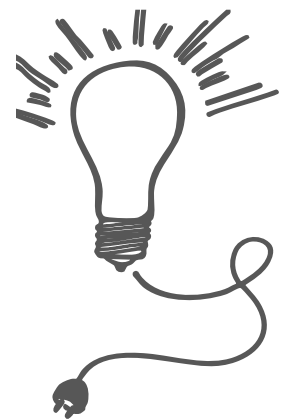
## HIGH FREQUENCY SOLAR INVERTER EXP SERIES

### PRODUCT DESCRIPTION

BHF19 EXP is a multi-function inverter/charger, combining functions of inverter, MPPT solar charger and battery charger to offer uninterruptible power support in portable size. PV1900 EXP Series can run without battery. The Maximum PV array open circuit voltage can reach 500V and MPPT voltage is 150~450Vdc, which can help customers make full use of solar energy.

### PRODUCT FEATURES

- Pure Sine Wave output
- Smart LCD setting (Working modes, Charge Current, Charge Voltage, etc)
- Built-in MPPT solar charge controller
- MAX PV Array Open Circuit Voltage: 500V (450V for parallel)
- Can provide the power to the load without battery
- Combining solar system, AC utility, and battery power source to supply continuous power
- Cold start function
- Parallel operation with up to 9 units (for 48V mode)
- WIFI remote monitoring (optional)
- Dual outputs for smart load management (optional)



RANGE BHF19EXP4024  
& BHF19EXP6048

## PRODUCT SPECIFICATIONS

### BHF19 SOLAR INVERTER EXP SERIES

Model	BHF19 EXP 4024	BHF19 EXP 6048
Default Battery System Voltage	24VDC	48VDC
<b>INVERTER OUTPUT</b>		
Rated Power	4000VA / 4000W	6000VA / 6000W
Surge Power	8000W	12000W
Waveform	Pure Sine Wave	
AC Voltage Regulation (Batt.Mode)	230VAC±5%(Setting)	
Inverter Efficiency (Peak)	0.92	
Transfer Time	10ms(UPS / VDE4105) / 20ms(APL)	
<b>AC INPUT</b>		
Voltage	230VAC	
Selectable Voltage Range	170-280VAC(UPS) / 90-280VAC(APL) / 184-253VAC(VDE)	
Frequency Range	50Hz / 60Hz (Auto sensing)	
<b>BATTERY</b>		
Normal Voltage	24VDC	48VDC
Floating Charge Voltage	27.4VDC	54.8VDC
Overcharge Protection	30VDC	60VDC
<b>SOLAR CHARGER &amp; AC CHARGER</b>		
Maximum PV Array Open Circuit Voltage	500VDC (450V for parallel)	
Charging Algorithm	3-Step (Flooded Battery, AGM / GEL / LEAD Battery), 4-Step (Li)	
Maximum PV Array Power	5000W	6000W
PV Array MPPT Voltage Range	150-450VDC (150-430VDC for parallel)	
Maximum Solar Charge Current	100A	120A
Maximum AC Charge Current	80A	100A
Maximum Charge Current	100A	120A
<b>MECHANICAL SPECIFICATIONS</b>		
Machine Dimension (W*H*D)(mm)	322*486*134	309*505*147
Package Dimension (W*H*D)(mm)	410*545*200	410*615*260
N.W (kg)	10.5	12.5
G.W (kg)	11.5	13.5
<b>OTHER</b>		
Humidity	5% to 95% Relativ Humidity (Non-condensing)	
Operating Temperature	0°C-50°C	
Storage Temperature	-15°C -60°C	
Warranty	2years	
<b>CERTIFICATION &amp; STANDARDS</b>		
CE-EMC+LVD (EN6100-6-3:2007, EN6100-6-1:2017+EN IEC62109-1:2010, EN IEC62109-2:2011)		
EN IEC62368-1:2020+A11:2020		
CE-LVD (IEC62109-1:2010, EN IEC62109-2:2011)		
EN IEC62368-1:2018, EN IEC62109-1:2010, EN IEC62109-2:2011		

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# BOLTRONZ

## HIGH FREQUENCY SOLAR INVERTER EXP SERIES

### PRODUCT DESCRIPTION

BHF19 EXP is a multi-function inverter/charger, combining functions of inverter, MPPT solar charger and battery charger to offer uninterruptible power support in portable size. PV1900 EXP Series can run without battery. The Maximum PV array open circuit voltage can reach 500V and MPPT voltage is 150~450Vdc, which can help customers make full use of solar energy.

### PRODUCT FEATURES

- Pure Sine Wave output
- Smart LCD setting (Working modes, Charge Current, Charge Voltage, etc)
- Built-in MPPT solar charge controller
- MAX PV Array Open Circuit Voltage: 500V (450V for parallel)
- Can provide the power to the load without battery
- Combining solar system, AC utility, and battery power source to supply continuous power
- Cold start function
- Parallel operation with up to 9 units (for 48V mode)
- WIFI remote monitoring (optional)



RANGE - BHF19EXP6248,  
BHF19EXP8048,  
BHF19EXP10048, and  
BHF19EXP12048

## PRODUCT SPECIFICATIONS

### BHF SOLAR INVERTER EXP SERIES

Model	BHF19 EXP 6248	BHF19 EXP 8048	BHF19 EXP 10048	BHF19 EXP 12048
Default Battery System Voltage	48VDC			

### INVERTER OUTPUT

Rated Power	6200VA/6200W	8000VA/8000W	10000VA/10000W	12000VA/12000W
Surge Power	12400W	16000W	20000W	24000W
Waveform	Pure sine wave			
AC Voltage Regulation (Batt.Mode)	230VAC±5%(Setting)			
Inverter Efficiency (Peak)	>92%			
Transfer Time	10ms(UPS / VDE4105) / 20ms(APL)			

### AC INPUT

Voltage	230VAC			
Selectable Voltage Range	170-280VAC(UPS) / 90-280VAC(APL) / 184-253VAC(VDE)			
Frequency Range	50Hz / 60Hz (Auto sensing)			

### BATTERY

Normal Voltage	48VDC	48VDC	48VDC	48VDC
Floating Charge Voltage	54.8VDC	54.8VDC	54.8VDC	54.8VDC
Overcharge Protection	60VDC	60VDC	60VDC	60VDC

### SOLAR CHARGER & AC CHARGER

Maximum PV Array Open Circuit Voltage	500VDC (450V for parallel)			
Charging Algorithm	3-Step (Flooded Battery, AGM / GEL / LEAD Battery), 4-Step (Li)			
Maximum PV Array Power	4000W*2	4000W*2	5000W*2	6000W*2
PV maximum input current	18A*2	18A*2	27A*2(40A max)	27A*2(40A max)
PV Array MPPT Voltage Range	90-450VDC (90-430VDC for parallel)			
Maximum Solar Charge Current	120A	120A	150A	150A
Maximum AC Charge Current	100A	120A	150A	150A
Maximum Charge Current	120A	120A	150A	150A

### MECHANICAL SPECIFICATIONS

Machine Dimension (W*H*D)(mm)	425*473*145	425*527*145	425*527*145	425*527*145
Package Dimension (W*H*D)(mm)	548*632*257	548*632*257	548*632*257	548*632*257
N.W (kg)	12.5	17.48	17.48	19.50
G.W (kg)	13.5	20.00	20.00	22.00

### OTHER

Humidity	5% to 95% Relativ Humidity (Non-condensing)			
Operating Temperature	0°C-50°C			
Storage Temperature	-15°C -60°C			
Warranty	2years			

### CERTIFICATION & STANDARDS

CE-EMC+LVD (EN6100-6-3:2007, EN6100-6-1:2017+EN IEC62109-1:2010, EN IEC62109-2:2011)				
EN IEC62368-1:2020+A11:2020				
CE-LVD (IEC62109-1:2010, EN IEC62109-2:2011)				
EN IEC62368-1:2018, EN IEC62109-1:2010, EN IEC62109-2:2011				

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# BOLTRONZ

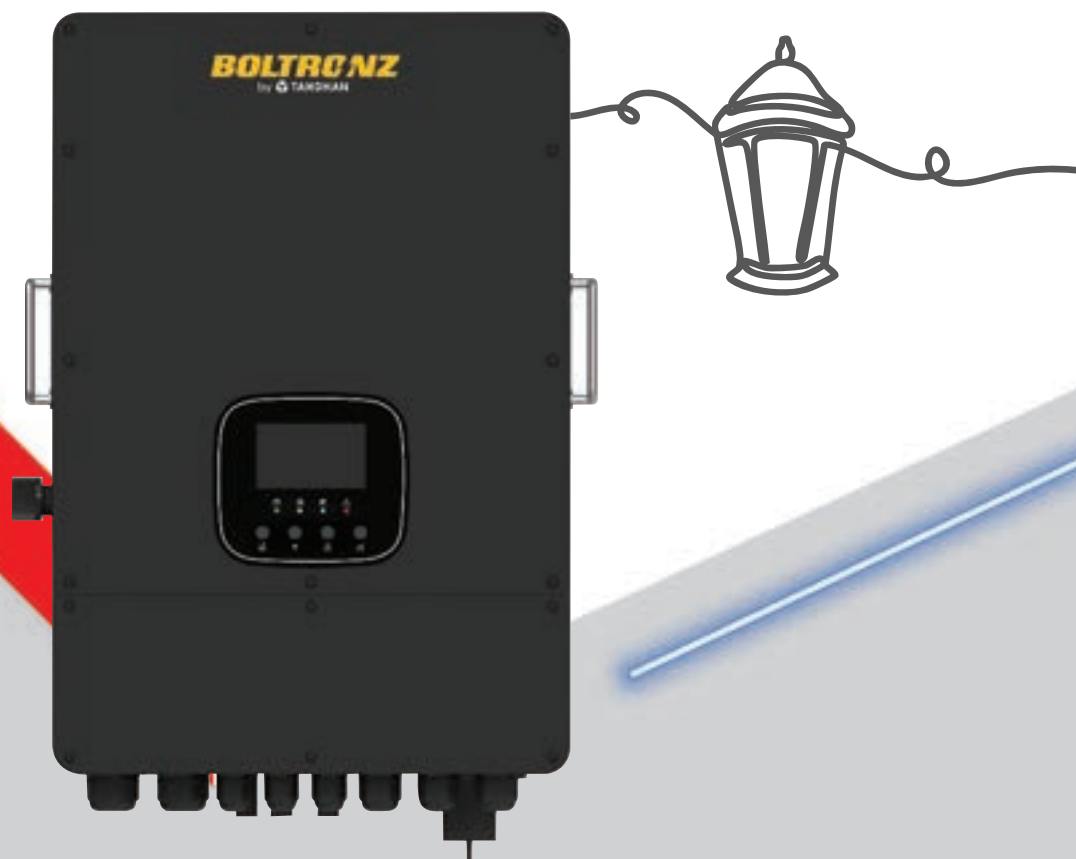
## HIGH FREQUENCY HYBRID SOLAR INVERTER (ON/OFF GRID)

### PRODUCT DESCRIPTION

BHF 11 EU is brand new three phase hybrid inverter with low battery voltage 48V, ensuring system safe and reliable. With compact design and high-power density, this series supports 1.3 DC/AC ratio, saving device investment. It supports three phase unbalanced output, extending the application scenarios. Equipped with CAN port (x2) BMS and parallel, x1 RS485 port for BMS, x1 RS232 port for remotely control, x1 DRM port, which makes the system smart and flexible.

### PRODUCT FEATURES

- 100% unbalanced output, each phase max. output up to 50% rated power
- Max. 6 pcs parallel for on-grid and off-grid operation
- AC couple to retrofit existing solar system
- Support multiple batteries parallel
- Max. charging/discharging current of 240A
- Support storing energy from diesel generator
- 48V low voltage battery, transformer isolation design
- IP65 water-proof and dust-proof
- "Time of use" function: a maximum of 6 time segments can be set
- Wifi monitoring



RANGE - BHF 11-5KL3 EU  
to BHF 11-16KL3-EU

## BHF11 ON/OFF GRID HYBRID SOLAR INVERTER

Model	BHF 11-5KL3-EU	BHF 11-6.5KL3-EU	BHF 11-8KL3-EU	BHF 11-10KL3-EU	BHF 11-12KL3-EU
Rated power	5000W	6500W	8000W	10000W	12000W
<b>BATTERY INPUT DATA</b>					
Battery type	Lead-acid battery / Lithium battery				
Battery voltage	48V				
Battery voltage range	40-60V				
Charging curve	3-stage adaptive with maintenance/Equalization				
Charging Strategy for Li-Ion Battery	Self-adaption to BMS				
Over-current protection/ Over-temperature protection	Yes / Yes				
Maximum charging/discharging power	5000W	6500W	8000W	10000W	12000W
Maximum charging/discharging current	120A	150A	190A	210A	240A
<b>PV STRING INPUT DATA</b>					
Max. DC Input Power	6500W	8450W	10400W	13000W	15600W
Maximum DC voltage	800V				
Start-up Voltage	160V				
MPPT voltage range	200-650V				
Maximum input current	15A/15A		26A/13A		
No.of MPP Tracker/ No.of Strings per MPP Tracker	2/1+1		2/1+1		
<b>AC INPUT/OUTPUT DATA</b>					
Rated AC Input/ Output Power	5000W	6500W	8000W	10000W	12000W
Max AC Input/ Output Power	5500W	7150W	8800W	11000W	13200W
AC Input/ Output Rated Current	7.6/7.2A	9.8/9.42A	12.1/11.6A	15.2/14.5A	18.2/17.4A
Max AC Input/ Output Current	8.4/8A	10.8/10.4A	13.4/12.8A	16.7/15.9A	20/19.1A
Max. Three-phase Unbalanced Output Current	11.4/10.9A	14.7/14.1A	18.2/17.4A	22.7/21.7A	27.3/26.1A
Power Factor Adjustment Range	0.8 leading to 0.8 lagging				
Rated Input/Output Voltage	3P-220/380,230/400Vac				
Rated Input/Output Grid Frequency/Range	50/60:45-55/55-65				
Total Harmonics Current Distortion (THDi)	<3% (of nominal power)				
DC Current Injection	<0.5% In				
<b>EFFICIENCY</b>					
Max. Efficiency/Euro Efficiency	≥97.5%/97%				
<b>PROTECTION</b>					
Integrated	PV Arc Fault Detection, Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Output Shorted Protection				
Surge Protection	DC Type III/AC Type III				
<b>GENERAL DATA</b>					
Operating Temperature Range (°C)	-20°C to +60°C, >45°C Derating				
Cooling	Smart cooling				
Noise (dB)	≤55dB				
Communication with BMS	Wi-Fi/USB/GPRS/RS485/CAN				
Machine Dimension (W*H*D)(mm)	444*654.2*259.2				
N.W(kg)	35				
Protection Degree	IP65				
Installation Style	Wall-mounted				
Warranty	5Yrs the Warranty Period Depends the Final Installation Site of Inv.				
<b>CERTIFICATION &amp; STANDARDS</b>					
CE-EMC+LVD (EN6100-6-3, EN6100-6-1+EN IEC 62109-1, EN IEC 62109-2); CE-LVD(EN 62477-1) ; IEC 60529; EN50549-1; Poland Type A, (NC RfG:2016, PSE:2018, PTPIREE:2021)C10/C11; UNE217001-2020; UNE217002-2020, NTS-631 (Type A); G98+G99					

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## BHF 11 ON/OFF GRID **HYBRID SOLAR INVERTER**

MODEL	BHF 11-13KL3-EU	BHF 11-14.2KL3-EU	BHF 11-15KL3-EU	BHF 11-16KL3-EU
Rated power	13000W	14200W	15000W	16000W
<b>BATTERY INPUT DATA</b>				
Battery type	Lead-acid battery / Lithium battery			
Battery voltage	48V			
Battery voltage range	40-60V			
Charging curve	3-stage /Equal Charging			
Charging Strategy for Li-Ion Battery	AdaptiveBMS System			
Over-current protection/ Over-temperature protection	Yes / Yes			
Maximum charging/discharging power(W)	13000W	14200W	15000W	16000W
Maximum charging/discharging current(A)	260A	280A	300A	320A
<b>PV STRING INPUT DATA</b>				
Max. DC Input Power	26000W	28400W	30000W	32000W
Maximum Input Power of each PV (PV1/PV2)	18300W/10100W	20000W/11100W	21100W/11700W	22500W/12500W
Rated PV Input Voltage (V)	500V			
Maximum DC Voltage	800V			
Start-up Voltage	160V			
MPPT voltage range	200-650V			
Full load MPPT Voltage range(V)	464V-650V	507V-650V	536V-650V	571-650V
PV Maximum input current (A)	36A+20A			
PV Maximum Short Circuit current (A)	54A+30A			
No.of MPP Tracker/ No.of Strings per MPP Tracker	2/2+1			
<b>Generator Input Data</b>				
Rated AC Input active Power (W)	13000W	14200W	15000W	16000W
Max. AC Input apparent Power (VA)	14300VA	15620VA	16500VA	17600VA
Rated AC Input Current (A)	18.8A	20.6A	21.7A	23.2A
<b>Smart Load Output Data</b>				
Rated AC Output active Power (W)	13000W	14200W	15000W	16000W
Max. AC Output apparent Power (VA)	14300VA	15620VA	16500VA	17600VA
Rated AC Output Current (A)	18.8A	20.6A	21.7A	23.2A
<b>Mico Inv. Input Data</b>				
Rated AC Input active Power (W)	13000W	14200W	15000W	16000W
Max. AC Input apparent Power (VA)	14300VA	15620VA	16500VA	17600VA
Rated AC Input Current (A)	18.8A	20.6A	21.7A	23.2A

## BHF 11 ON/OFF GRID **HYBRID SOLAR INVERTER**

MODEL	BHF 11-13KL3-EU	BHF 11-14.2KL3-EU	BHF 11-15KL3-EU	BHF 11-16KL3-EU
<b>AC INPUT/OUTPUT DATA</b>				
Rated AC Input/ Output Power	13000W	14200W	15000W	16000W
Max AC Input/ Output Power	14300VA	15620VA	16500VA	17600VA
AC Input/ Output Rated Current	18.8A	20.6A	21.7A	23.2A
Max AC Input/ Output Current	20.6A	22.6A	23.8A	25.5A
Maximum Output Short Circuit current (A)	100A			
Grid bypass current (A)	60A			
Peak Power (off-grid)	2 Times rated power, 10 Second			
Power Factor Adjustment Range	0.8 leading to 0.8 lagging			
Rated Input/Output Voltage	3P-220/380,230/400Vac			
Rated Input/Output Grid Frequency/Range	50/60; 45-55/55-65			
Total Harmonics Current Distortion	THD<3% (Linear Load)			
DC Current Injection	<0.5% In			
<b>EFFICIENCY</b>				
Max. Efficiency/Euro Efficiency	≥97.6%/97%			
MPPT Efficiency	>99%			
<b>PROTECTION</b>				
Integrated	PV Arc Fault Detection, Anti-islanding Protection, PV String Input Reverse Polarity Protection, Insulation Resistor Detection, Residual Current Monitoring Unit, Output Over Current Protection, Output Shorted Protection			
Surge Protection	DC Type III/AC Type III			
<b>GENERAL DATA</b>				
Operating Temperature Range (°C)	-20°C to +60°C, >45°C Derating			
Cooling Method	Intelligent Air Cooling			
Noise (dB)	≤56dB			
Communication with BMS	RS485/CAN			
Machine Dimension (W*H*D)(mm)	446*656*285 (Excluding Connectors and rack )			
Package Dimension (W*H*D)(mm)	567*816*404			
N.W(kg)	43kg			
Protection Degree	IP66			
Installation Style	Wall-mounted			
Warranty	5Yrs the Warranty Period Depends the Final Installation Site of Inv.			
<b>CERTIFICATION &amp; STANDARDS</b>				
CE-EMC+LVD (EN6100-6-3, EN6100-6-1+EN IEC 62109-1, EN IEC 62109-2); CE-LVD(EN 62477-1) ; IEC 60529; EN50549-1; Poland Type A, (NC RfG:2016, PSE:2018, PTPIREE:2021)C10/C11; UNE217001-2020; UNE217002-2020, NTS-631 (Type A); G98+G99				
*The technical specifications of this document are subject to change without any notice				

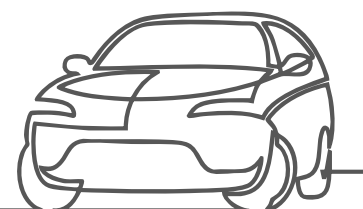
# AUTOMOTIVE BATTERY

## PRODUCT DESCRIPTION

Driving in extreme condition calls for a trusted companion to generate a powerful start. Presenting the Tandhan Power range of battery systems from the most trusted power storage solution provider in India. A wide array of passenger and commercial vehicle batteries have been engineered to excel even on rough roads and challenging climate parameters. The time tested experience of manufacturing international quality products make Tandhan Power batteries an obvious choice for global driving community.

## PRODUCT HIGHLIGHTS

- **ELECTROLYTE LEVEL INDICATOR**  
Lid mounted window indicator is provided, which changes color when electrolyte falls below specified level for immediate top-up and hence ensure longer life.
- **ADVANCED TECHNOLOGY SEPARATORS**  
To add high reliability and reduce resistance, improved separators are used.
- **SAFETY VENTING**  
Electrolyte spilling is resisted in Tandhan Power batteries with introduction of leak and explosion proof venting system, to ensure greater safety even while driving on rough roads.
- **HIGH PERFORMANCE PLATES**  
Manufactured with advanced alloy, Tandhan Power battery plates are designed to reduce grid passivation. Specially designed plates with superior tensile strength, high temperature creep resistance and longer charge holding capacity add greater endurance to Tandhan Power batteries.
- **EASY HANDLING**  
Ergonomic yet strongly reinforced light weight polypropylene case with convenient lifting handle design ensures great maneuverability to Tandhan Power batteries.



## PRODUCT SPECIFICATIONS

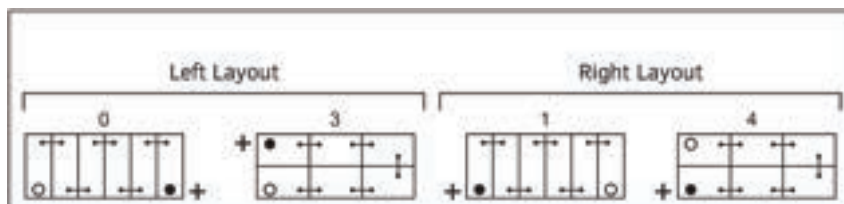
### Tandhan Power range for Passenger Cars, Utility Vehicles and Light Commercial Vehicles

NOMENCLATURE	LAYOUT		AMPERE-HOUR CAPACITY AT C20 RATING	COLD CRANKING PERFORMANCE (AMPS) SAE/EN1	RESERVE CAPACITY (MUNITES)	DIMENSIONS (MM)			CHARGE INDICATOR
						LENGTH	WIDTH	HEIGHT	
38B19	L,0	R,1	35	272	43	187	127	227	✓
44B20-BH	L,0	R,1	35	272	49	197	127	227	✓
40B24	L,0	R,1	40	225	51	238	129	227	✓
40B24-S	L,0	R,1	40	225	51	238	129	227	✓
60B24	L,0	R,1	45	369	64	238	129	227	✓
60B24-S	L,0	R,1	45	369	64	238	129	227	✓
55D23-BH	L,0	R,1	60	460	90	232	172	255	✓
75D23-BH	L,0	R,1	62	500	100	232	172	255	✓
48D26-BH	L,0	R,1	50	340	72	260	173	225	✓
55D26-BH	L,0	R,1	60	460	90	260	173	225	✓
65D26-BH	L,0	R,1	65	500	100	260	173	225	✓
80D26-BH	L,0	R,1	70	540	110	260	173	225	✓
65D31-BH	L,0	R,1	70	520	110	305	173	225	✓
75D31-BH	L,0	R,1	75	560	120	305	173	225	✓
95D31-BH	L,0	R,1	80	600	130	305	173	225	✓
105D31-BH	L,0	R,1	90	720	150	305	173	225	✓
115D31-BH	L,0	R,1	95	750	155	305	173	225	✓
DIN43-LH	L,0	NA	43	324	57	210	175	175	✓
DIN44	L,0	R,1	44	360	62	210	175	190	✓
DIN50	L,0	R,1	50	405	71	210	175	190	✓
DIN55	L,0	R,1	55	420	80	243	175	190	✓
DIN60	L,0	R,1	60	440	88	243	175	190	✓
DIN62	L,0	R,1	62	480	90	243	175	190	✓
DIN66	L,0	R,1	66	480	110	278	175	190	✓
DIN72-LH	L,0	R,1	72	585	100	278	175	175	✓
DIN74	L,0	R,1	74	570	115	278	175	190	✓
DIN80	L,0	NA	80	675	141	313	175	190	-
DIN90	L,0	NA	90	720	144	353	175	190	-
DIN100	L,0	NA	100	720	141	353	175	190	-

### Tandhan Power Range for Heavy Commercial Vehicles

NOMENCLATURE	LAYOUT		AMPERE-HOUR CAPACITY AT C20 RATING	COLD CRANKING PERFORMANCE (AMPS) SAE/EN1	RESERVE CAPACITY (MUNITES)	DIMENSIONS (MM)			HANDLE	CHARGE INDICATOR
						LENGTH	WIDTH	HEIGHT		
MF100 (95E41)	L,0	R,1	100	576	163	410	176	233	YES	✓
MF120 (115F51)	L,3	R,4	120	612	205	505	182	240	ROPE	-
MF150 (145G51)	L,3	R,4	150	706	264	508	222	257	ROPE	✓
MF170	L,3	R,4	170	706	264	508	222	240	ROPE	✓
MF200 (195H52)	L,3	R,4	200	950	330	521	278	242	ROPE	✓
MF170 (67018)	L,3	NA	170	940	340	513	223	215	ROPE	✓
DIN180 (68032)	L,3	NA	180	850	320	513	223	215	ROPE	✓

### KEY TO BATTERY LAYOUT



### TERMINAL DETAILS

Types of terminals	Tip diameter (f.D)	
	Positive (mm)	Negative (mm)
T1	14.7 <sup>0</sup> <sub>-0.3</sub>	13.0 <sup>0</sup> <sub>-0.3</sub>
T2	19.5 <sup>0</sup> <sub>-0.3</sub>	17.9 <sup>0</sup> <sub>-0.3</sub>

Confirm to JIS5301-1999 and DIN standards. All Tandhan Power batteries are fitted with charge indicator (acid level indicator) and supplied in black container. No charge indicator for DIN90.\*Supplied in white container and black lid.

## EFB START STOP “WE BELIEVE IN TECHNOLOGY BREAKTHROUGHS”

Tandhan Power range for passenger car, utility vehicles and light commercial vehicles

NOMENCLATURE	LAYOUT		AMPERE-HOUR	CCA	DIMENSIONS (MM)			HANDLE	TERMINAL
					LENGTH	WIDTH	HEIGHT		
EFB-M42-B20	L,0	R,1	38	340	197	127	227	Y	SMALL
EFB-N55-B24	L,0	R,1	50	430	238	129	227	Y	SMALL & STD
EFB-Q85-D23	L,0	R,1	65	550	232	172	225	Y	STANDARD
EFB-S95-D26	L,0	R,1	75	680	260	173	225	Y	STANDARD
EFB-T110-D31	L,0	R,1	90	740	305	173	225	Y	STANDARD
EFB-L1	L,0	R,1	50	430	207	175	190	Y	STANDARD
EFB-L2	L,0	R,1	60	500	243	175	190	Y	STANDARD
EFB-L3	L,0	R,1	74	600	278	175	190	Y	STANDARD
EFB-L4	L,0	NA	80	750	313	175	190	Y	STANDARD
EFB-L5	L,0	NA	100	800	353	175	190	Y	STANDARD

## Tandhan Power Range for Heavy Commercial Vehicles

NOMENCLATURE	LAYOUT		AMPERE-HOUR	CCA	DIMENSIONS (MM)			HANDLE	TERMINAL
					LENGTH	WIDTH	HEIGHT		
EFB-E41-MF100	L,0	R,1	100	680	410	176	233	M.EYE/HANDL	SMALL
EFB-F51-MF120	L,3	R,4	120	780	505	182	240	ROPE	SMALL & STD
EFB-DINB-MF150	L,3	R,4	150	850	513	224	220	M.EYE/ROPE	STANDARD
EFB-DINB-MF170	L,3	R,4	170	900	513	224	220	M.EYE/ROPE	STANDARD
EFB-DINC-MF200	L,3	R,4	200	1050	514	275	242	M.EYE/ROPE	STANDARD
EFB-DINC-MF225	L,3	R,4	225	1150	514	275	242	M.EYE/ROPE	STANDARD

# GENERATOR BATTERY

## PRODUCT HIGHLIGHTS

- Excellent starting ability with higher cranking power to weight ratio
- Superior maintenance free characteristics through advanced Ca-Ca technology requiring topping up once only in 9 months under standard operating condition
- Special lid design makes the battery spill-resistant
- Excellent storage life
- High charge retention characteristics with ability to perform even under partial state-of-charge condition
- Battery size rationalized to suit different Genset ratings
- Vent caps with advanced flame arrestors and micro-porous filter disc to arrest acid fumes
- Delivered factory charged and in ready-to-use condition

## PRODUCT SPECIFICATIONS

BATTERY NOMENCLATURE	CAPACITY (Ah) 20HR (REF)	MAXIMUM OVERALL DIMENSIONS (MM)			NOMINAL FILLED WEIGHT (KG)	ELECTROLYTE VOLUME (LITRES)	CHARGING CURRENT (A)	CCA AT - 18°C AS PER		GENSET KVA RATING	VOLTAGE SYSTEM	BATTERY LAYOUT
		L	W	H				IEC	SAE			
FGP0-GP110D31R	90	305	173	225	22.2	5	5.5	576	720	5 - 160	12V	RIGHT LAYOUT +-----+
FGP0-GP110D31L	90	305	173	225	22.2	5	5.5	576	720	82 - 380	24V	LEFT LAYOUT ------+
FGP0-GP115E41L	105	410	176	233	28.1	6.1	6.5	660	825	380 - 1010	24V	LEFT LAYOUT ------+



RANGE 90Ah to 105Ah



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