

# KIT SOLAR JAVALAMBRE

600  
Wh/día

## ¿QUÉ INCLUYE?

- 1 Módulo FV 150wp Policristalino (Estructura Incluida)
- 1 Batería TABSolar 12V 245Ah C100
- 1 Regulador TURBO ENERGY PWM - 10A
- 1 Inversor/cargador AXPERT MS 1.2/1200/20



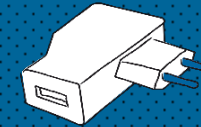
## ¿QUÉ PUEDES CONECTAR?



Televisión



3 Bombillas



Cargador



Portátil

## WS-150 36 cells/Poly



## FEATURES

-  Superior Module Efficiency as per International Benchmarks
-  Positive Power Tolerance 0 / + 5W
-  PID Free Modules with long term reliability
-  Glass with Anti Reflective Coating Improves light transmission
-  Salt mist, Ammonia, Blowing Sand and Hail Resistant
-  Sustain Heavy Wind & Snow loads (2400 Pa & 7500 Pa)
-  IP 67 rated MC4 compatible connectors
-  Excellent Performance in low light



**250MW**

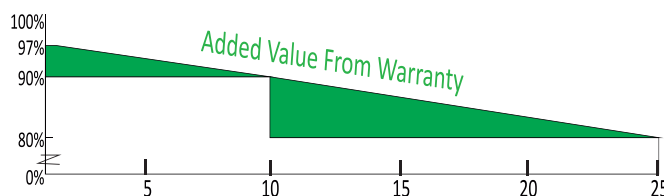
Module Manufacturing Capacity

**25**  
Years  
Output  
Warranty

10 years Limited Product Warranty  
25 years Limited Power Output Warranty:  
-Minimum 90% at the end of 10 years  
-Minimum 80% at the end of 25 years



Over 20 in house tests  
(DH: Damp heat test  
TC: Thermal cycling test  
HF: Humidity freeze test)



## INTERNATIONAL & NATIONAL CERTIFICATIONS



ISO 9001:2008 | ISO 14001:2004 | OHSAS 18001:2007  
IEC 61215 | IEC 61730-1&2 | UL 1703 | MCS | IEC 61701 | IEC 62716

## Electrical Characteristics\*

Model	WS-150
Nominal Maximum Power, $P_m$ (W)*	150
Power tolerance	0-5%
Open Circuit Voltage, $V_{oc}$ (V)*	22,1
Short Circuit Current, $I_{sc}$ (A)*	8,9
Voltage at Maximum Power, $V_{mp}$ (V)*	17,5
Current at Maximum Power, $I_{mp}$ (A)*	8,52
Maximum System Voltage (V)	1000 (IEC)
Module Efficiency (%)*	15,45
Maximum Series Fuse Rating (A)	15
Limiting Reverse Current (A)	15

\*Under Standard Test Conditions (STC) of 1000 W/m<sup>2</sup> irradiance, AM 1.5 spectrum and 25°C cell temperature.

## Mechanical Characteristics

Length x Width x Thickness (L x W x T) - mm	1490 x 675 x 35
Weight (kg)	11,75
Solar Cells per Module (Units) / Arrangement	36
Solar Cell Type / Length x Width - mm (inch)	Poly /156 x 156 (6" x 6")
Encapsulate	Tempered & Low Iron Glass / 3.2 mm Ethylene Vinyl Acetate
Frame Material	Anodized Aluminum Alloy
Junction Box (Protection degree / Material)	IP65 rated / Weatherproof PPO enclosure with bypass diodes
No. of bypass diodes	3 / 6
Connector (Protection degree / Type)	IP67 rated / MC4 compatible
Cable (Length / Cross sectional area)	1100 mm / 4 mm <sup>2</sup>
Packaging	24 + 24 + 5 (2 pallets + 1 box)
Mechanical load	7500 Pa
Fire safety class	C
Safety application class	A
Safety class	II

## Thermal Characteristics

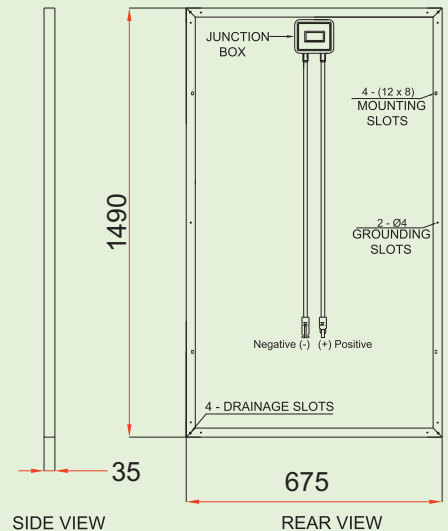
Temperature coefficient of Current ( $I_{sc}$ ), $\alpha$ (%/°C)	0,05
Temperature coefficient of Voltage ( $V_{oc}$ ), $\beta$ (%/°C)	-0,35
Temperature coefficient of Power ( $P_m$ ), $\gamma$ (%/°C)	-0,45
NOCT (°C)	47 ± 2
Operating temperature range (°C)	-40 to 85

WAAREE is one of india's leading multi-technology companies, headquartered at Mumbai Founded in 1989, WAAREE successfully developed cutting edge technologies to become one of the most preferred brands in the field of instrumentation, petroleum/gas and energies. The company has transformed itself from a single business into a multi-technology organisation, diversifying into exciting areas of Solar Energy, Industrials Valves, Petroleum Equipments and Process control instrumentation. WAAREE has a presence in over 68 countries with primary location in Milan, Dubai, Tokyo, San Francisco, Sydney and soon starting at Jakarta. It has more than 105 global channel partners. In india it has 26 sales offices. WAAREE has a huge list of satisfied customers over the years. Waaree is committed to supply best quality products & technology to its customers. WAAREE's products are manufactured at its state-of-the-art manufacturing facilities and is committed to excel in providing the society with world class quality products.

## Contact: WAAREE ENERGIES LTD.

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## Design Specifications

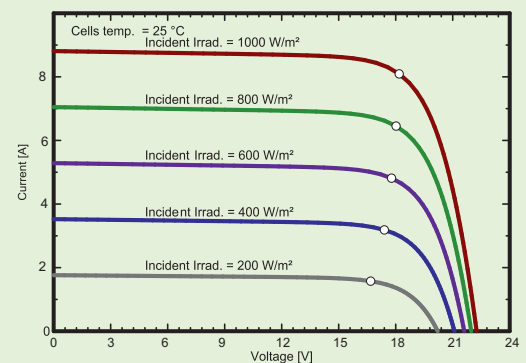


SIDE VIEW

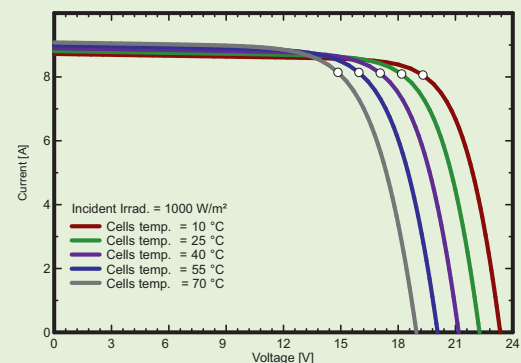
REAR VIEW

All Dimensions are in mm

## I-V Curve Variation with Irradiance



## I-V Curve Variation with Temperature



The specifications are for reference purpose only. Waaree reserves the right to change the specifications without prior notice.

BEST SOLUTION FOR STORING SUN'S ENERGY. PHOTOVOLTAIC SYSTEMS ARE BEST KNOWN AS A METHOD FOR GENERATING ELECTRIC POWER BY USING SOLAR CELLS TO CONVERT ENERGY FROM THE SUN INTO A FLOW OF ELECTRONS. YOU CAN STORE SUN'S ENERGY FOR THE TIME WHEN NO SUN IS AVAILABLE.



## TAB Motion

**PASTED** 300 cycles according to EN 60254-1. (Voltage: 12V)

EN 61427 EN 50342 EN 60254-1 EN 50342 DIN 43593

TYPE	Dimensions (mm) L×W×H1/H2	Weight (kg)	BOX	Pcs. EUR pal.	LAYOUT	BHD	SOLAR C100 (Ah)	SLI C20 (Ah)	TRACTION C5 (Ah)	SLI EN (A)	SLI DIN (A)
50 P	242×175×190	16,7	L2	57	0	B13	70	60	50	480	300
60 P	278×175×190	19,3	L3	48	0	B13	85	75	60	560	340
85 P LS	353×175×190	26,2	L5	36	0	B13	115	105	85	800	480
85 P	312×176×212	24,4	59518	36	0	B0	122	104	85	640	395
100 P	344×172×212/234	29,9	60528	36	0	B0	140	122	100	680	410
115 P	344×172×262/284	36,4	62512	24	0	B0	150	135	115	720	430
110 P	509×175×182/208	37,4	MAC 110	24	3	B0	150	135	110	810	490
150 P	512×223×194/220	46,8	B	21	3	B0	190	180	150	1150	690
190 P	518×273×214/240	60,8	C	18	3	B0	250	225	190	1350	800

**TUBULAR** 1200 cycles according to EN 60254-1. (All Aquamatic)

EN 61427 EN 50342 EN 60896-1 EN 60254-1

TYPE	Dimensions (mm) L×W×H1/H2	Weight (kg)	BOX	Pcs. EUR pal.	LAYOUT	BHD	Voltage (V)	SOLAR C120 (Ah)	SLI C20 (Ah)	STATIONARY C10 (Ah)	TRACTION C5 (Ah)
95 T	344×172×212/234	30,0	60528	36	0	B0	12	130	115	104	95
110 t	344×172×262/284	37,3	62512	24	0	B0	12	150	132	120	110
Golf Cart T	244×190×270	31,3	Golf Cart	36	0	B0	6	240	218	200	180

### TAB MOTION PASTED is a flooded semi traction battery with positive pasted plates.

Semi traction batteries of TAB MOTION PASTED type are intended for solar systems, battery driven carts, boats, wheelchairs, sweeping machines, truck applications, caravans and motorhomes, etc. Advantages: excellent vibration resistance, high rate discharge capability, high performance in difficult working conditions, etc.

### TAB MOTION TUBULAR is a flooded small traction battery with positive tubular plates.

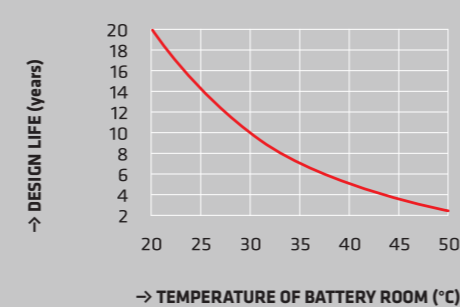
Small traction batteries of TAB MOTION TUBULAR type are reliable and durable, intended for applications which are used in harsh environments - cleaning machines, mobile elevating work platforms, electric elevating platform trucks and also perfect solution for storing energy.

## TAB OPzS SOLAR batteries

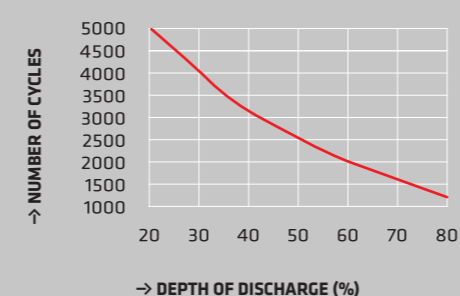
### THE SOLAR BATTERIES ARE DISTINGUISHED FOR:

- » HIGH CAPACITY
- » LONG LIFE TIME
- » REDUCED MAINTENANCE
- » LOW SELF-DISCHARGING
- » QUICK AND SIMPLE ACID LEVEL CONTROL
- » ECONOMICAL WATER CONSUMPTION
- » APPROPRIATE DIMENSIONS AND WEIGHT
- » THE LOWEST AND CONSTANT MAINTENANCE CURRENT

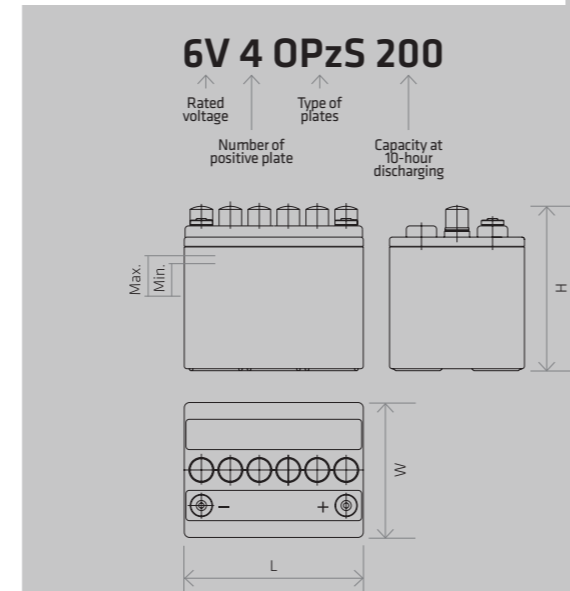
### Design life vs. Temperature



### No. of cycles vs. DOD



### Technical data and dimensions



## Application

Tab Solar batteries are intended for the supply of telecommunication facilities, computers, emergency lighting, alarm, control and monitoring systems in power plants and distribution stations, at railway stations, airports etc. Due to their extremely low self-discharging they are suitable for plants supplied by solar cells.

## Construction

The positive armored plate is of a tubular type, which means that the active substance (PbO<sub>2</sub>) is contained in special gauntlet made of polyester fibres and hardened by an impregnation compound. Such construction prevents escaping of an active substance during the operation and ensures a long life time.

The grids of a positive and a negative plate are made of special low percentage (less than 2 %) antimony alloy with addition agents for improvement of crystalline structure of casting. Negative plates are pasted-type plates with special alloys maintaining porosity of an active substance during the operation. As an electrolyte, a diluted sulphuric acid (H<sub>2</sub>SO<sub>4</sub>) with a density of 1.24 ± 0.01 kg/l at 20 °C, and at a maximum permitted level is used.

Separators separating the positive plates from the negative ones are made of microporous plastic material with a low electric resistance.

The cell containers are made of transparent SAN, while lid of nontransparent SAN or ABS material (SAN for blocks, ABS for 2V cells).

In a special process, the lids are tightly sealed to the container.

The terminal plugs are sealed with rubber seals. This prevents any escape of electrolyte from the cells. Due to the transparent containers the electrolyte level is clearly visible, the maximum and minimum levels are marked on a self-adhesive acid-proof label on a container side.

A cell plug seals well (ceramic filter), and prevents leakage of any sulphuric acid vapours, however, it lets through hydrogen and oxygen.



Two versions of batteries are being manufactured:

» **DRY-CHARGE VERSION:** a battery has to be filled up with an electrolyte and supplementary charged before use. The plates are already formed and in a special process protected against oxidation. They can be stored without problems.

» **ELECTROLYTE-CHARGE:** battery can be installed immediately, because it is already filled up with electrolyte and electrically charged as well. The capacity test has already been performed by the producer.

In case of problems with ordering we will be glad to advise and assist you in the selection of the suitable type of battery. FOR DETAIL INFORMATION PLEASE CHECK OUR OPERATION MANUAL.

VZBIL 2012 - production: atelje.jk

# TAB



## SOLAR BATTERIES

# TURBO ENERGY PWM SOLAR CHARGE CONTROLLER



Model	LS1024B	LS2024B	LS3024B
Nominal system voltage	12 / 24 Vdc auto work		
Rated battery current	10 A	20 A	30 A
Rated load current	10 A	20 A	30 A
Maximum battery voltage	50 Vdc		
Grounding	Common positive		
Self-consumption	8.4 mA (12V), 7.8 mA (24V)		
Temp. Compensation	-3 mV / °C / 2 V (25 °C ref)		
Equalize charging voltage	Sealed: 14.6 V, Flooded: 14.8 V		
Boost charging voltage	Gel: 14.2 V, Sealed: 14.4 V, Flooded: 14.6 V		
Float charging voltage	Gel / Sealed / Flooded: 13.8 V		
Low voltage reconnect voltage	Gel / Sealed / Flooded: 12.6V		
Low voltage disconnect voltage	Gel / Sealed / Flooded: 11.1V		

\* Technical data for 12V system at 25 °C

Model	LS1024B	LS2024B	LS3024B
Dimensions	138.6 x 69.3 x 37 mm	159.6 x 81.4 x 47.8 mm	200.6 x 101.3 x 57 mm
Terminal	4 mm <sup>2</sup>	10 mm <sup>2</sup>	10 mm <sup>2</sup>
Net weight	0.13 kg	0.3 kg	0.5 kg

## Environmental Specification

Working temp.	-35 °C ~ +55 °C
Storage temp.	-35 °C ~ +80 °C
Humidity	≤ 95 % (NC)
Enclosure	IP30

## APPLICATION

- Solar home system
- Solar lighting system
- Solar road signals
- Solar surveillance
- Solar RVs and boats
- Small solar power station

## FEATURES

- Three system voltage configuration: 12V / 24V auto work
- High efficiency PWM charging with temperature compensation
- 3 LEDs shows PV charging, battery and load status
- RS-485 bus communication
- Software update function

## ELECTRONIC PROTECTIONS

- PV short circuit
- Battery Over discharge
- Battery reverse polarity
- Load overload
- Overheating
- PV reverse polarity
- Battery overcharge
- Load short circuit

## MORE POWERFUL FUNCTION VIA MT50 OR PC

- Battery type option: Gel, sealed, flooded and USER
- Programmable parameters
- LVD or SOC load disconnect function



# Axpert MS



- Pure sine wave inverter
- Selectable input voltage range for home appliances and personal computers
- Selectable charging current
- Auto restart while AC is recovering
- Overload and short circuit protection
- Generators & Computer-related devices compatible
- Smart battery charger design for optimized battery performance
- Cold start function

## Axpert MS Inverter Selection Guide

MODEL	Axpert MS 700	Axpert MS 1.2K
<b>CAPACITY</b>	700 VA / 500 W	1200 VA / 840 W
<b>INPUT</b>		
Voltage	230 VAC	
Selectable Voltage Range	170-280 VAC (For Personal Computers) 90-280 VAC (For Home Appliances)	
Frequency Range	50/60 Hz (Auto sensing)	
<b>OUTPUT</b>		
AC Voltage Regulation (Batt. Mode)	230VAC $\pm$ 5%	
Surge Power	1400 VA	2400 VA
Efficiency (Peak)	90%	
Transfer Time	10 ms (For Personal Computers) 20 ms (For Home Appliances)	
Waveform (Batt. Mode)	Pure sine wave	
<b>BATTERY &amp; AC CHARGER</b>		
Battery Voltage	12 VDC	
Floating Charge Voltage	13.5 VDC	
Low Battery Alarm Voltage	11.5 VDC	
Shutdown Voltage	10.5 VDC	
Overcharge Protection	15 VDC	
Maximum AC Charge Current	10 A or 15 A	10 A or 20 A
<b>PROTECTION</b>		
Full Protection	Overload and short circuit protection	
<b>PHYSICAL</b>		
Dimension, D X W X H (mm)	289 x 290 x 127	
Net Weight (kgs)	4.5	4.8
<b>ENVIRONMENT</b>		
Humidity	0 to 90% Relative Humidity (Non-condensing)	
Operating Temperature	0°C to 50°C	
Storage Temperature	-15°C to 70°C	

Product specifications are subject to change without further notice