

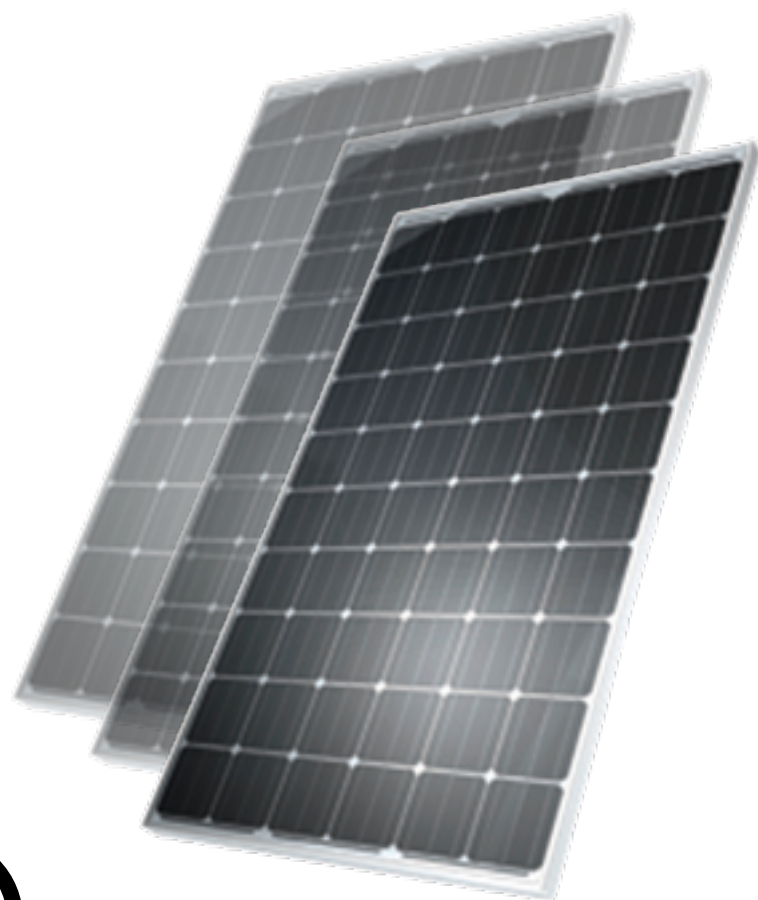
iKUBE

X400

Technical Sheet

1

Photovoltaic Modules



+

2

Inverter + Charge Controller



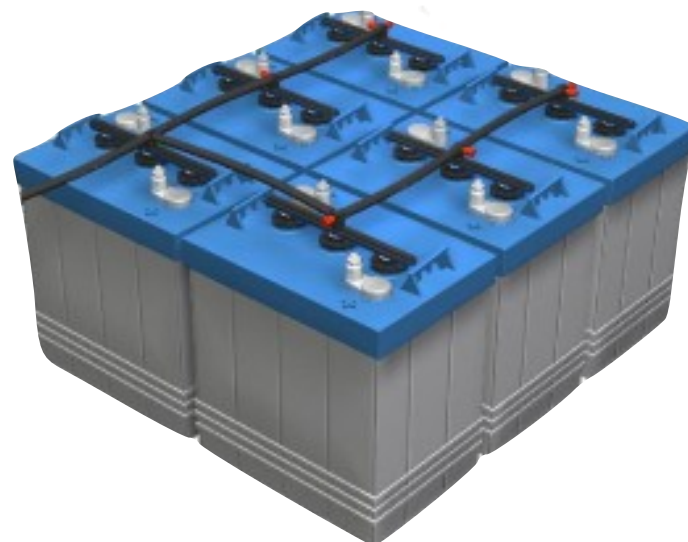
iKUBE
X400

● **Stand Alone Technical Sheet**

- Electric Diagram
- Technical Characteristics
- Contacts

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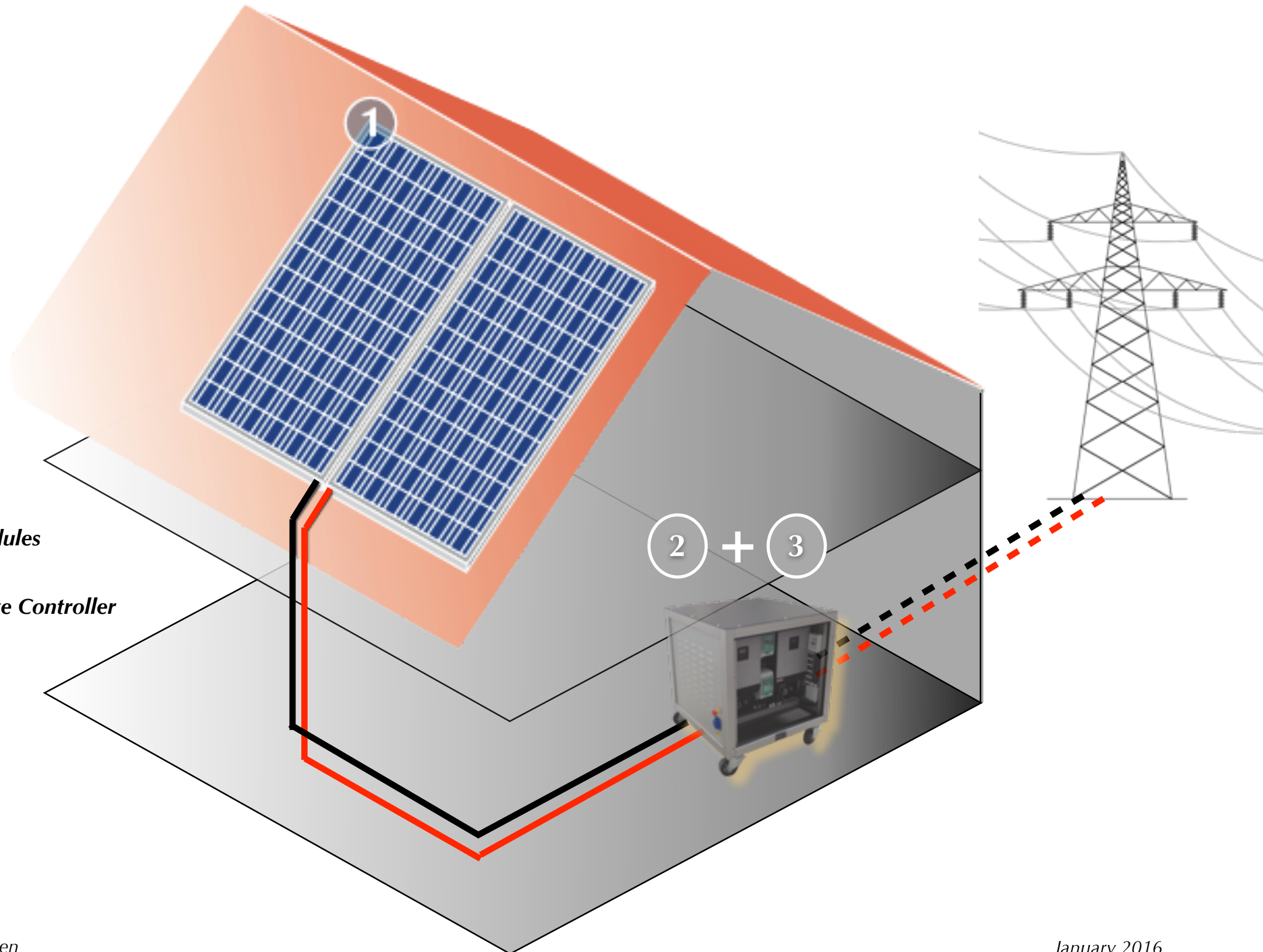
Battery Pack



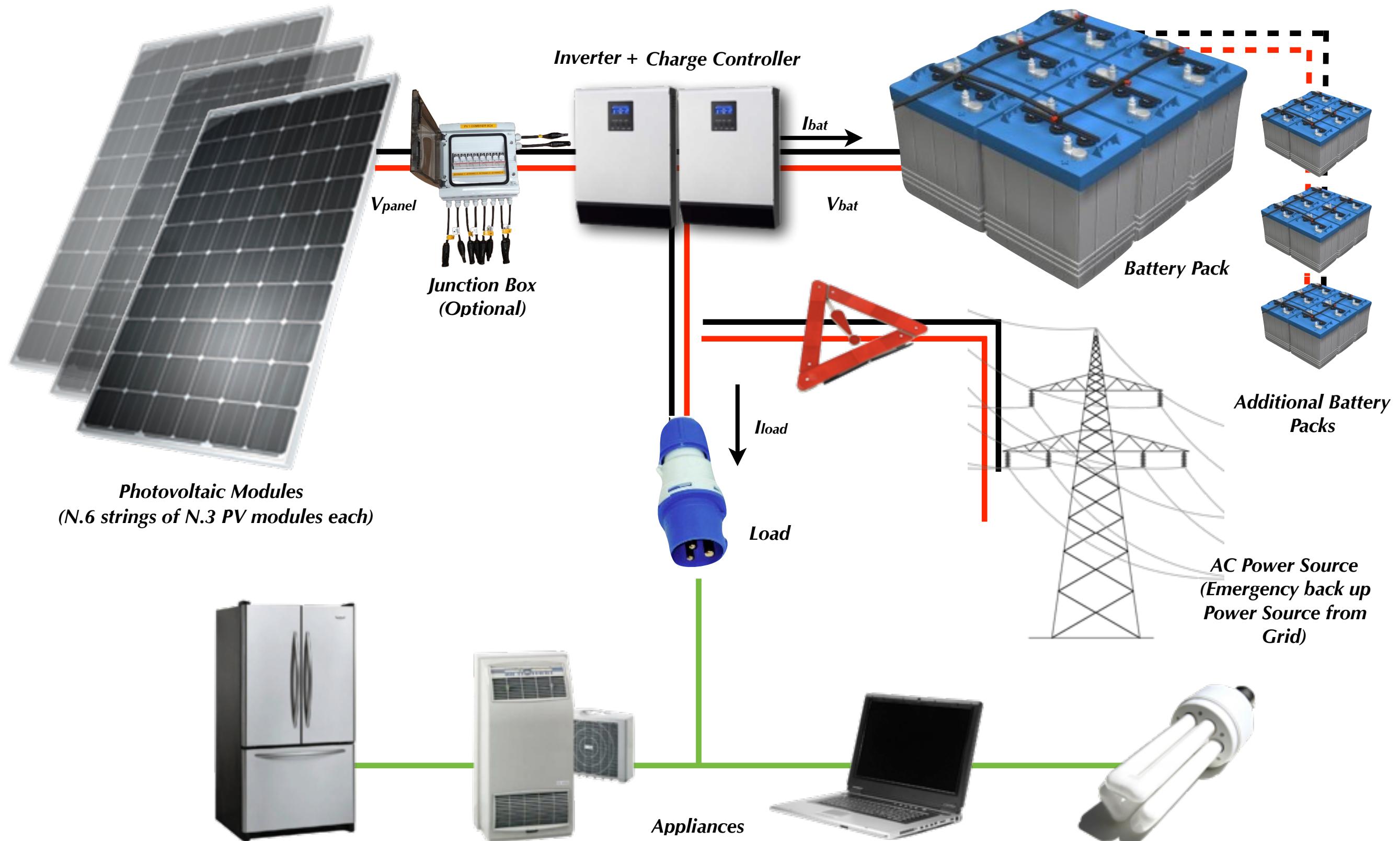
X400: Electric Diagram



- 1 Photovoltaic Modules
- 2 Inverter + Charge Controller
- 3 Battery Pack



X400: Electric Diagram



X400: Technical Characteristics

PV Modules



4,500 kWp !

ELECTRICAL DATA @ STC

Peak Power Watts- P_{MAX} (Wp)	250
Power Output Tolerance- P_{MAX} (%)	0/+3
Maximum Power Voltage- V_{MP} (V)	30.3
Maximum Power Current- I_{MPP} (A)	8.27
Open Circuit Voltage- V_{OC} (V)	37.6
Short Circuit Current- I_{SC} (A)	8.85
Module Efficiency η_m (%)	15.3

Values at Standard Test Conditions STC (Air Mass AM1.5, Irradiance 1000W/m², Cell Temperature 25°C).
Power measurement tolerance: $\pm 3\%$

ELECTRICAL DATA @ NOCT

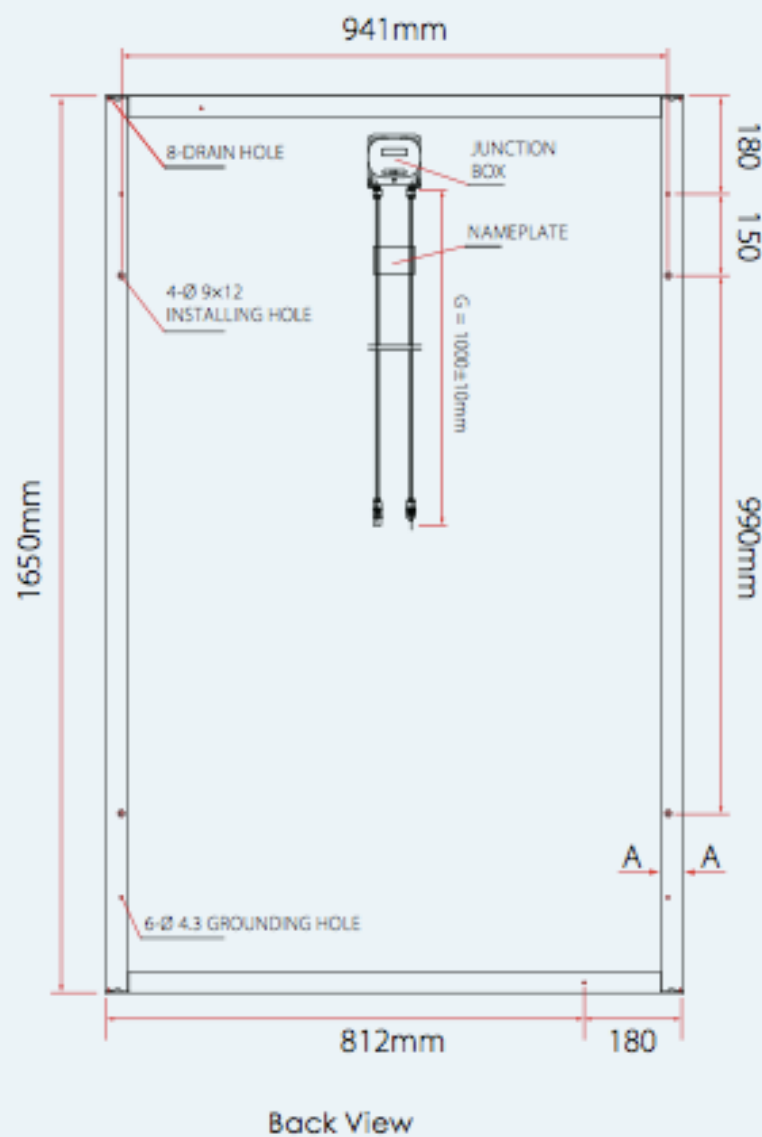
Maximum Power- P_{MAX} (Wp)	181
Maximum Power Voltage- V_{MP} (V)	27.0
Maximum Power Current- I_{MPP} (A)	6.70
Open Circuit Voltage (V)- V_{OC} (V)	34.3
Short Circuit Current (A)- I_{SC} (A)	7.25

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.
Power measurement tolerance: $\pm 3\%$

X400: Technical Characteristics

PV Modules

DIMENSIONS OF PV MODULE TSM-PC/PA 05



TEMPERATURE RATINGS

Nominal Operating Cell Temperature (NOCT)	46°C (±2°C)
Temperature Coefficient of P_{MAX}	- 0.43%/°C
Temperature Coefficient of V_{OC}	- 0.32%/°C
Temperature Coefficient of I_{SC}	0.047%/°C

WARRANTY

10 year workmanship warranty
 25 year linear performance warranty
 (Please refer to product warranty for details)

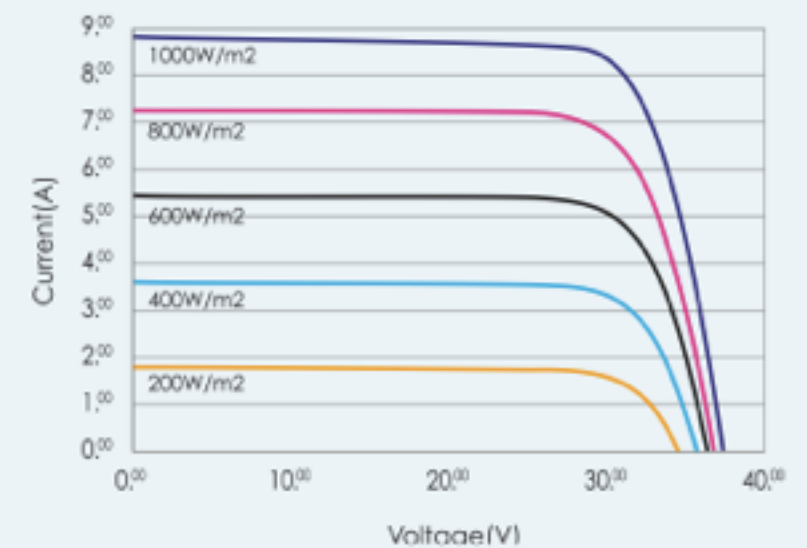
PACKAGING CONFIGURATION

Modules per box: 25 pcs
 Modules per 40' container: 650 pcs

MAXIMUM RATINGS

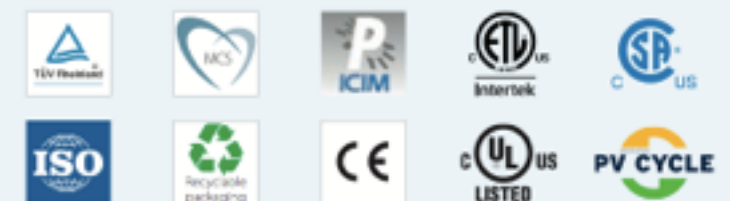
Operational Temperature	-40~+85°C
Maximum System Voltage	1000V DC(IEC)/ 600V DC(UL)
Max Series Fuse Rating	15A

I-V CURVES OF PV MODULE TSM-230 PC/PA 05



Average efficiency reduction of 4.5% at 200W/m² according to EN 60904-1.

CERTIFICATION



X400: Technical Characteristics

Inverter



x 2

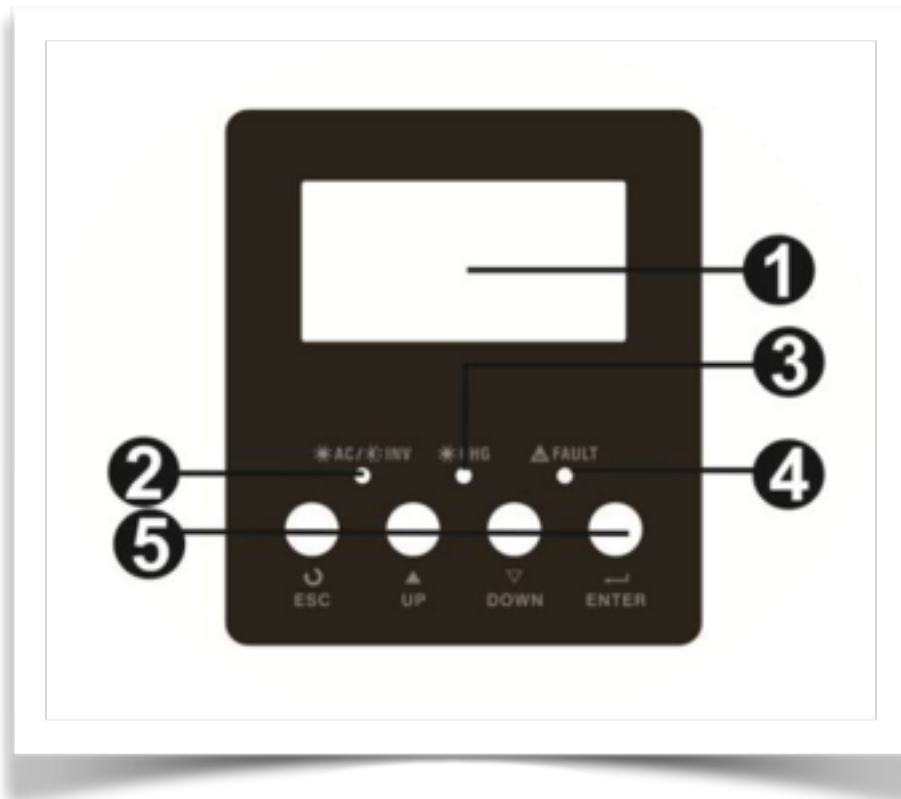
- Pure sine wave inverter
- Built-in MPPT solar charge controller
- Selectable input voltage range for home appliances and personal computers
- Selectable charging current based on applications
- Configurable AC/Solar input priority via LCD setting
- Compatible to mains voltage or generator power
- Parallel operation with up to 4 units
- Auto restart while AC is recovering
- Overload and short circuit protection
- Smart battery charger design for optimized battery performance
- Cold start function

RATED POWER	4000VA/3200W
INPUT	
Voltage	230 VAC
Selectable Voltage Range	170-280 VAC (For Personal Computers) ; 90-280 VAC (For Home Appliances)
Frequency Range	50 Hz/60 Hz (Auto sensing)
OUTPUT	
AC Voltage Regulation (Batt. Mode)	230VAC ± 5 %
Surge Power	8000VA
Efficiency (Peak)	93%
Transfer Time	10 ms (For Personal Computers); 20 ms (For Home Appliances)
Waveform	Pure sine wave
BATTERY & AC CHARGER	
Battery Voltage	48 VDC
Floating Charge Voltage	54 VDC
Overcharge Protection	54 VDC
Maximum Charge Current	20 A or 30 A
SOLAR CHARGER	
Maximum PV Array Power	3000 W
MPPT Range @ Operating Voltage	60VDC ~115VDC
Maximum PV Array Open Circuit V	145VDC
Maximum Charging Current	60A
Maximum Efficiency	98%
Standby Power Consumption	2 W
PHYSICAL	
Dimension, D x W x H (mm)	140 x 295 x 540
Net Weight (kgs)	13.3
OPERATING ENVIRONMENT	
Humidity	5% to 95% Relative Humidity(Non-condensing)
Operating Temperature	0°C - 55°C
Storage Temperature	-15°C - 60°C

* data referred to each inverter

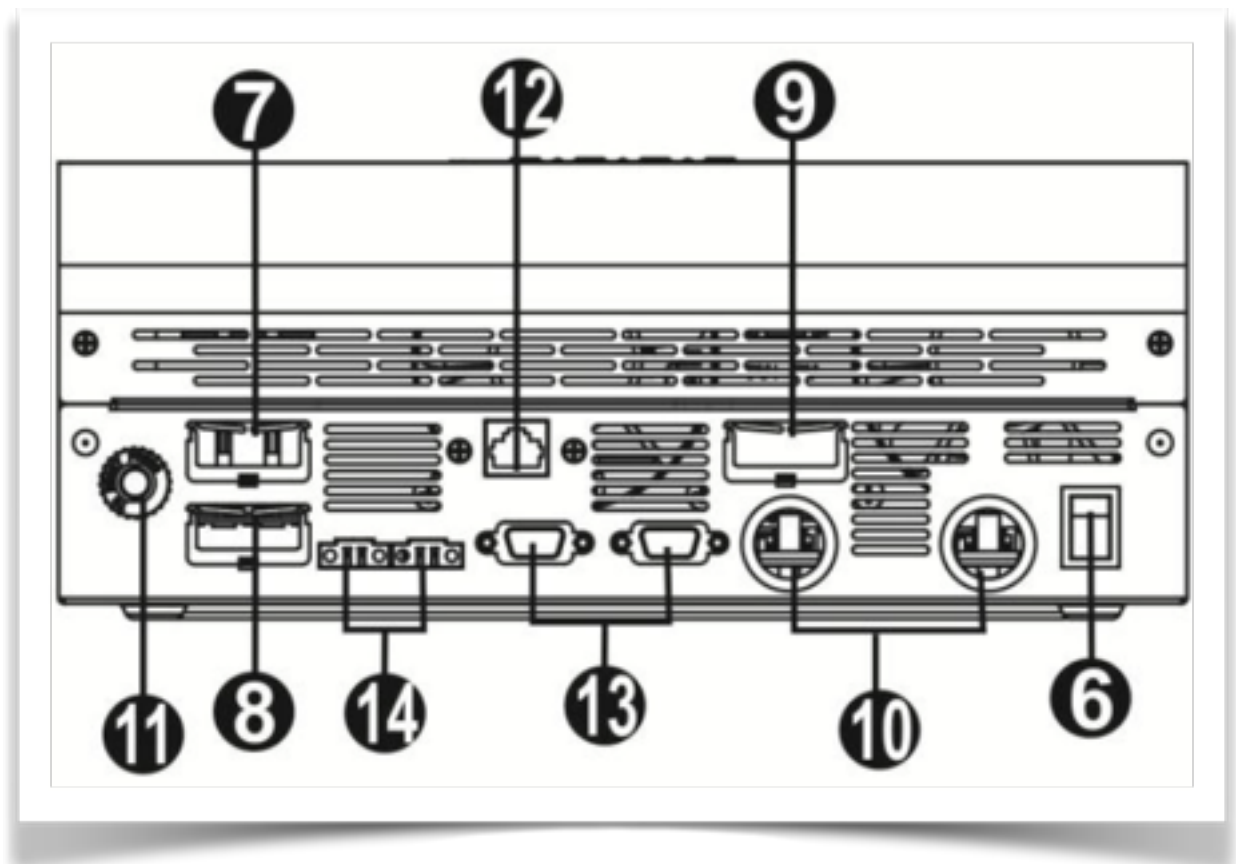
X400: Technical Characteristics

Overview



1. LCD display
2. Status indicator
3. Charging indicator
4. Fault indicator
5. Function buttons
6. Power on/off switch
7. AC input

Inverter

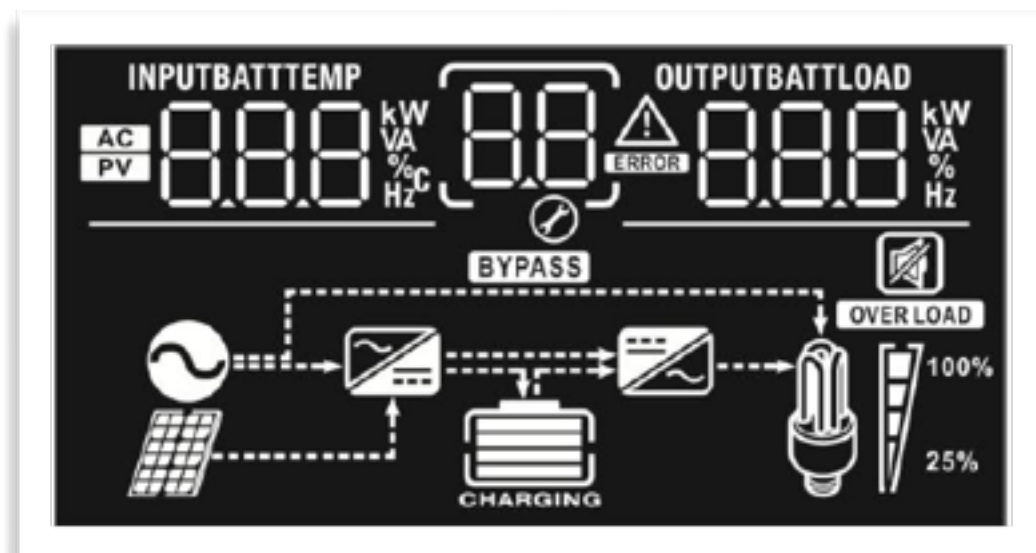














8. AC output
9. PV input
10. Battery input
11. Circuit breaker
12. RS232 communication port
13. Parallel communication cable (only for parallel model)
14. Current sharing cable (only for parallel model)










X400: Technical Characteristics

Inverter

LCD Information



Load Information				
		Indicates overload.		
	Indicates the load level by 0-24%, 25-50%, 50-74% and 75-100%.			
	0%~25%	25%~50%	50%~75%	75%~100%
				
Mode Operation Information				
		Indicates unit connects to the mains.		
		Indicates unit connects to the PV panel.		
		Indicates load is supplied by utility power.		
		Indicates the utility charger circuit is working.		
		Indicates the DC/AC inverter circuit is working.		
Mute Operation				
		Indicates unit alarm is disabled.		

Icon	Function description	
Input Source Information		
	Indicates the AC input.	
	Indicates the PV input	
	Indicate input voltage, input frequency, PV voltage, battery voltage and charger current.	
Configuration Program and Fault Information		
	Indicates the setting programs.	
	Indicates the warning and fault codes. Warning:  flashing with warning code. Fault:  lighting with fault code	
Output Information		
	Indicate output voltage, output frequency, load percent, load in VA and load in Watt.	
Battery Information		
	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode.	
In AC mode, it will present battery charging status.		
Status	Battery voltage	LCD Display
Constant Current mode / Constant Voltage mode	<2V/cell	4 bars will flash in turns.
	2 ~ 2.083V/cell	Bottom bar will be on and the other three bars will flash in turns.
	2.083 ~ 2.167V/cell	Bottom two bars will be on and the other two bars will flash in turns.
	> 2.167 V/cell	Bottom three bars will be on and the top bar will flash.
Floating mode. Batteries are fully charged.		4 bars will be on.

X400: Technical Characteristics

Battery Pack

DC 225 Ah C10 6V



x 8

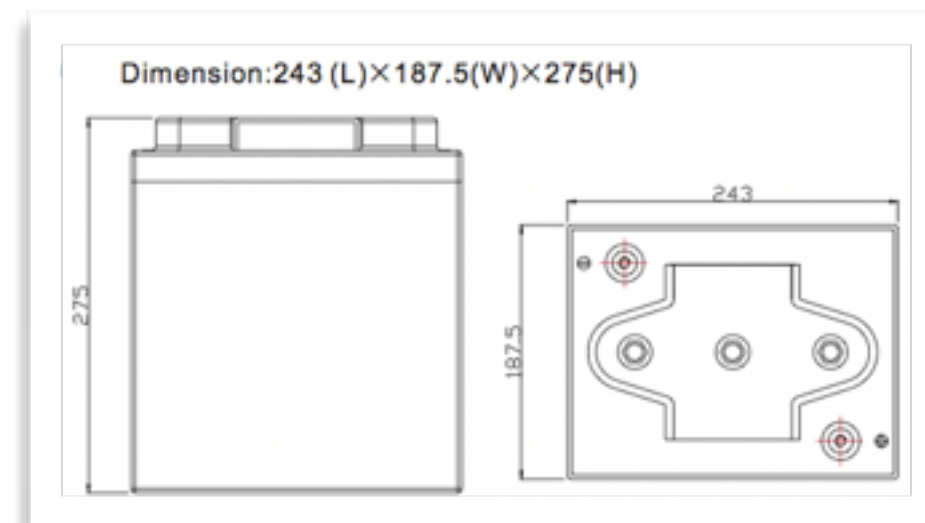
AGM Technology

A key feature of AGM batteries is the phenomenon of internal gas recombination.

As a charging lead-acid battery nears full state of charge, hydrogen and oxygen gasses are produced by the reactions at the negative and positive plates, respectively.

In a flooded battery, these gasses escape from the battery through the vents, thus requiring periodic water additions.

In an AGM battery the excellent ion transport properties of the liquid electrolyte held suspended in the glass mats, the oxygen molecules can migrate from the positive plate and recombine with the slowly evolving hydrogen at the negative plate and form water again. Under conditions of controlled charging, the pressure relief vents in AGM batteries are designed to remain closed, preventing the release of any gasses and water loss.

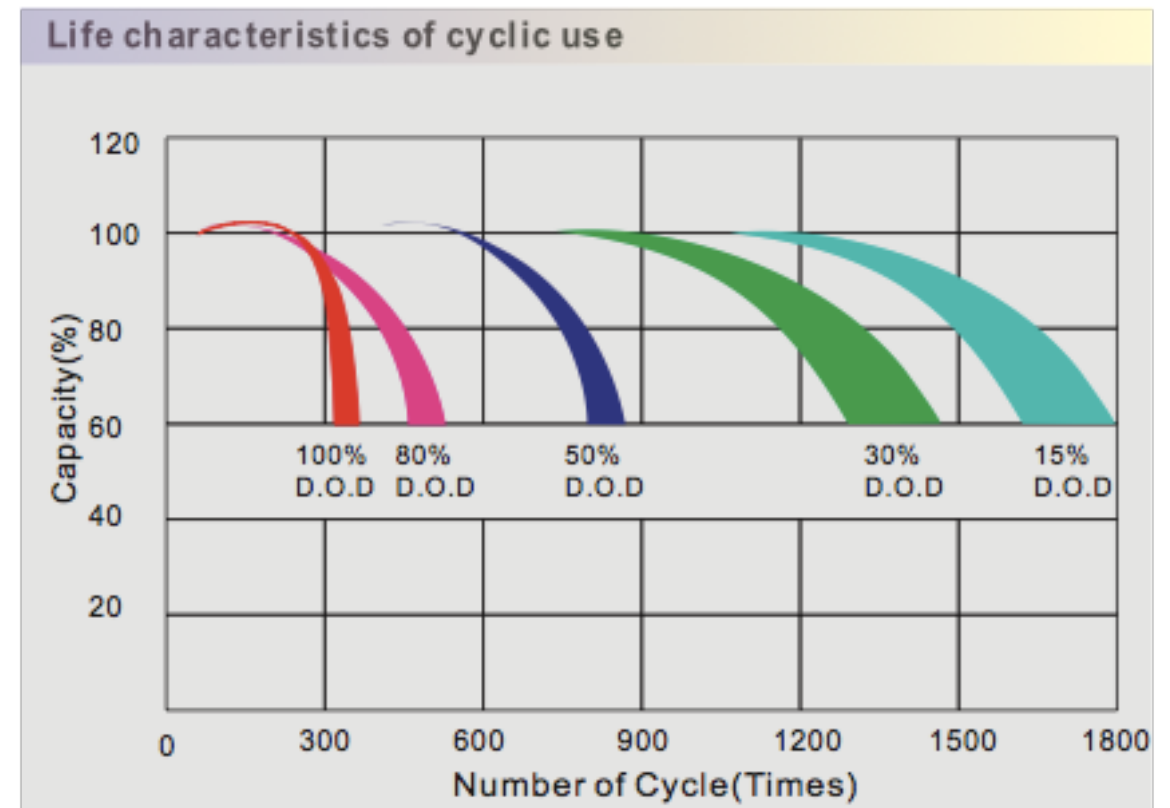
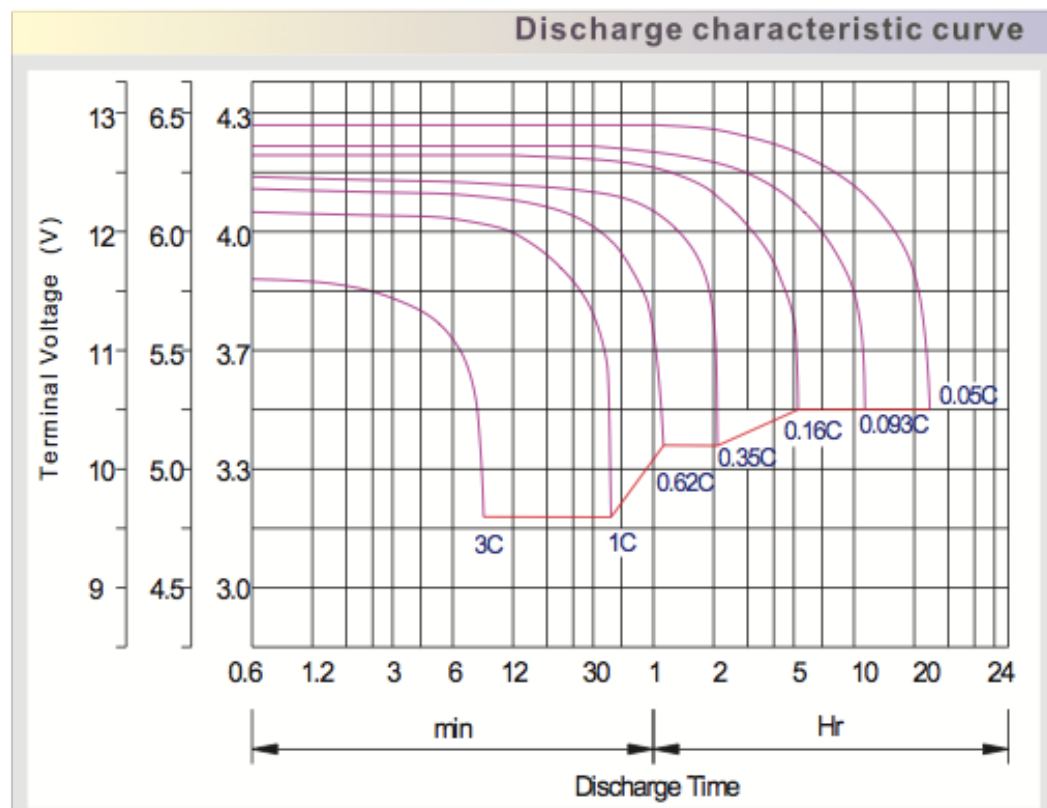


Cells Per Unit	3
Voltage Per Unit	6
Capacity	225Ah@10hr-rate to 1.80V per cell @25°C
Weight	Approx. 32.0 Kg
Max. Discharge Current	2250 A (5 sec)
Internal Resistance	Approx. 4.0 mΩ
Operating Temperature Range	Discharge: -20°C~60°C Charge: 0°C~50°C Storage: -20°C~60°C
Normal Operating Temperature Range	25°C±5°C
Float Charging Voltage	6.8 to 6.9 VDC/unit Average at 25°C
Recommended Maximum Charging Current Limit	67.5A
Equalization and Cycle Service	7.3 to 7.4 VDC/unit Average at 25°C
Self Discharge	RITAR Valve Regulated Lead Acid (VRLA) batteries can be stored for more than 6 months at 25°C. Self-discharge ratio less than 3% per month at 25°C. Please charge batteries before using.
Terminal	Terminal F14
Container Material	A.B.S. (UL94-HB) , Flammability resistance of UL94-V1 can be available upon request.

X400: Technical Characteristics

Battery Pack

Discharge & Duration



Capacity Factors With Different Temperature

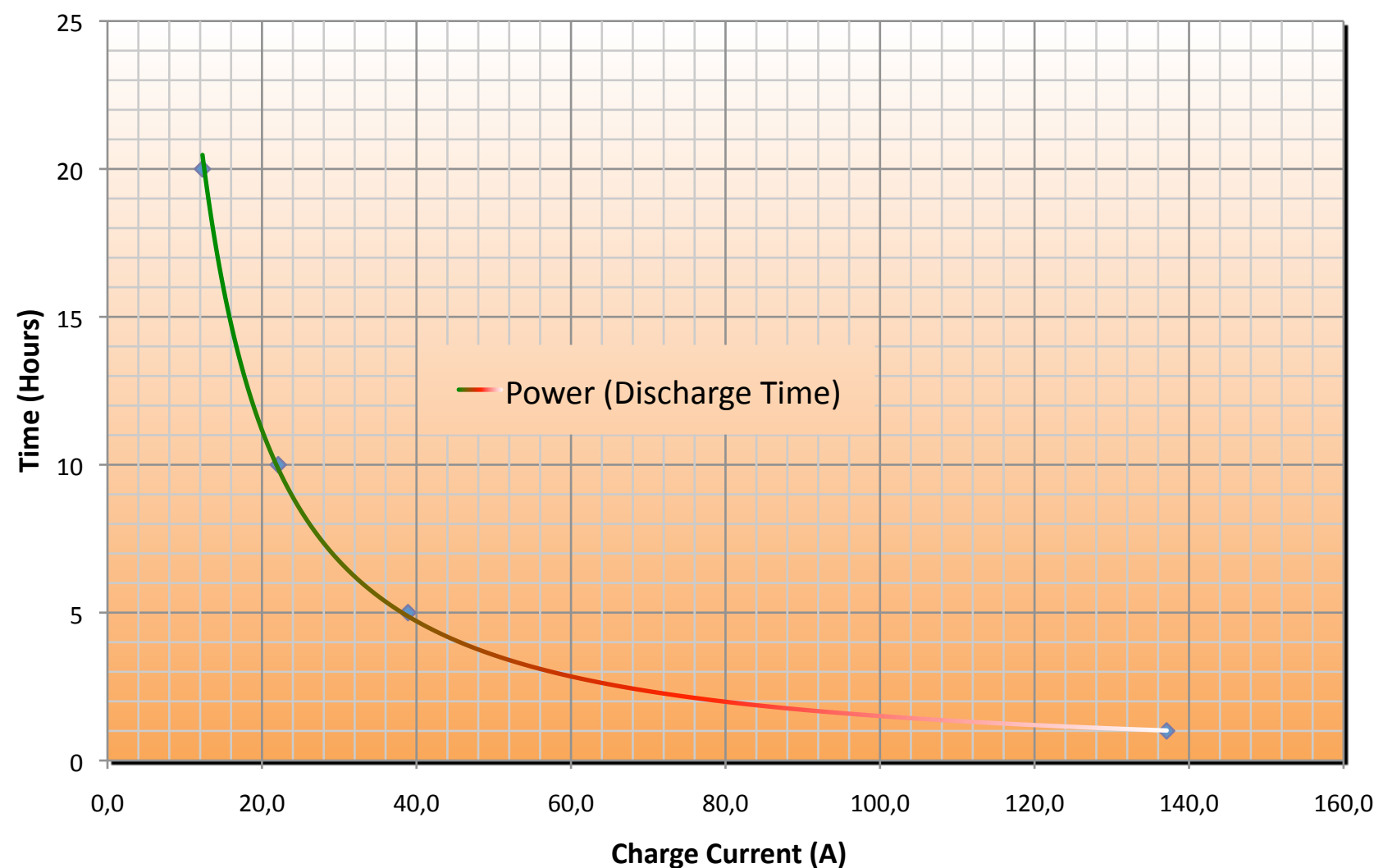
Battery Type		-20℃	-10℃	0℃	5℃	10℃	20℃	25℃	30℃	40℃	45℃
GEL Battery	6V&12V	50%	70%	83%	85%	90%	98%	100%	102%	104%	105%
	2V	60%	75%	85%	88%	92%	99%	100%	103%	105%	106%
AGM Battery	6V&12V	46%	66%	76%	83%	90%	98%	100%	103%	107%	109%
	2V	55%	70%	80%	85%	92%	99%	100%	104%	108%	110%

X400: Technical Characteristics

Battery Pack

The Autonomy of the iKube in total absence of sunlight is calculated as follows:

Discharge characteristics of battery DC 225 Ah C10 6V (from data sheet)



This Curve, approximately:

$$\text{Hours} = 466,64 * \text{Ampere}^{-1.246}$$

expresses how many hours a battery DC 225 Ah lasts, if its working with that level of current expressed in amperes.

X400: Technical Characteristics

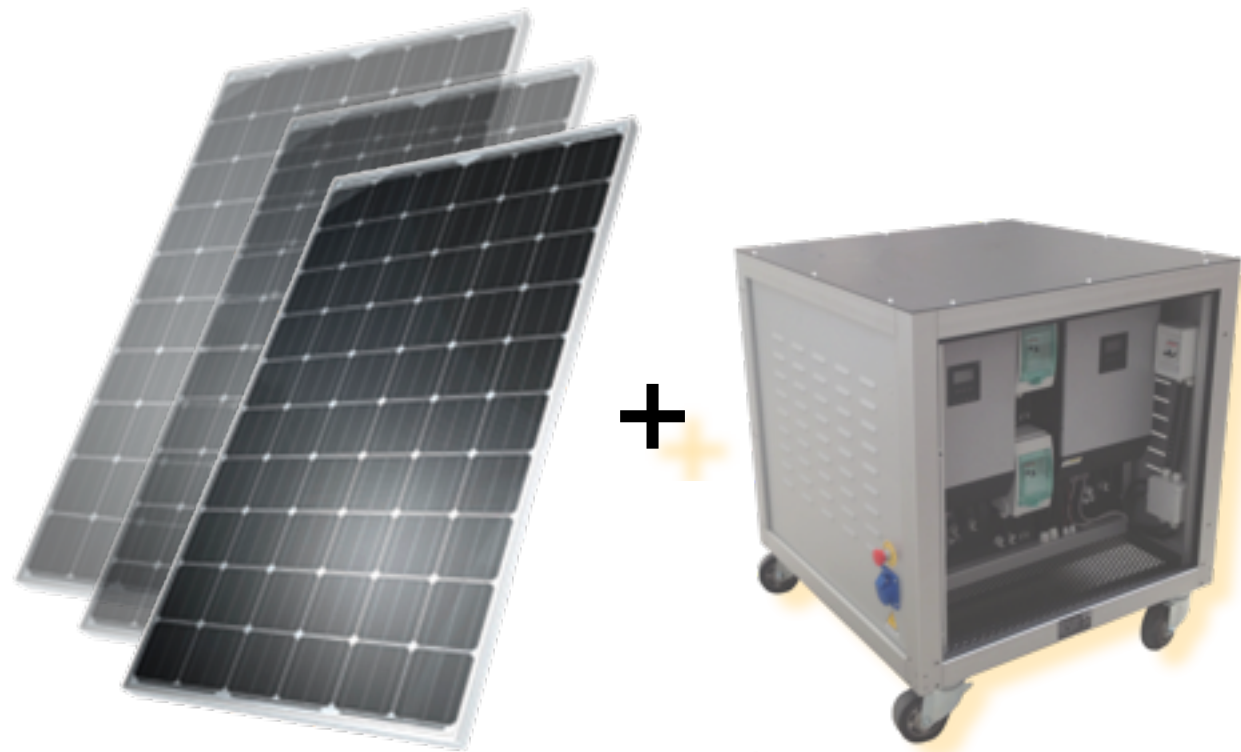
Battery Pack

<i>Power (W)</i>	<i>Remaining Hours</i>
100	165
500	22
1000	9,5
3000	2,4
4000	1,7
6000	1,0
8000	-

**The above Datas are referred to the standard battery pack contained in the iKube.
Additional external battery packs can be added to multiply the autonomy.**

X400: Technical Characteristics

iKUBE X400



Inverter Power	8.000 VA / 6.400 W
Box Dimensions	0,91x0,91x1,01 m
Box Weight	400 Kg
Autonomy (1 KW load)	10 h
Battery Pack	48V 225 Ah
Generator Power	4,500 KWp
N. PV Modules*	18

* PV Modules mounting structure not included

Product specifications are subject to change without further notice.

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