iKUBE F50

Technical Sheet

iKUBE F50

- **iKube**
  - Introduction
  - Electric Diagram
  - Opening & Closing System
  - Dimensions
  - Productivity/Authonomy
  - Technical Characteristics
  - Contacts

Free Mobile Green Energy

January 2016

F50: Introduction

Free
Mobile
Green
ENERGY

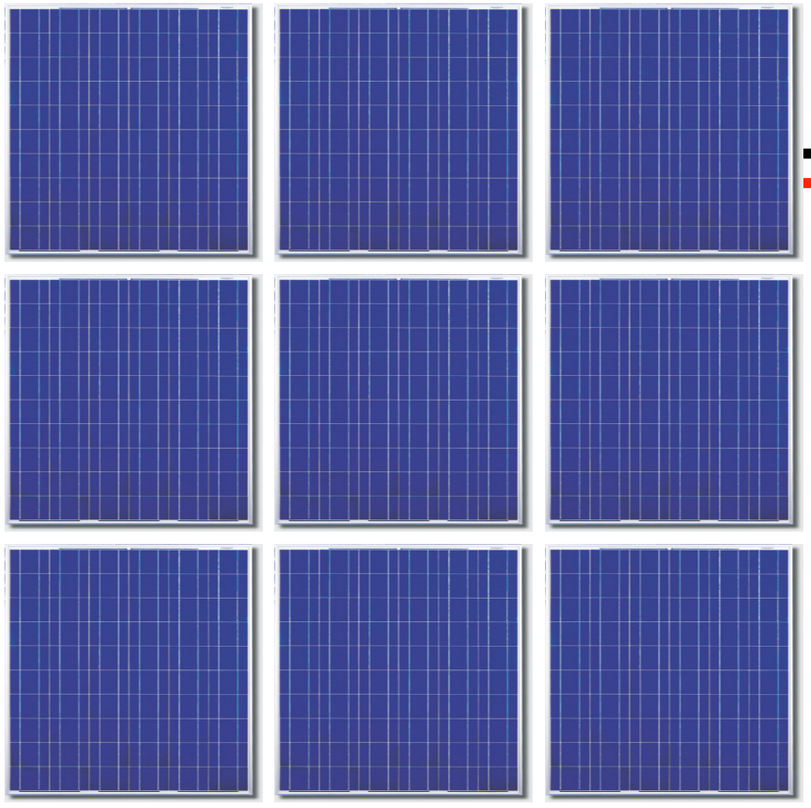
iKUBE is a ready to use mobile solar generator able to guarantee up to 2,4 kW power supply (3 inverter power options: 800W, 1.600W, 2.400W).

Designed to provide electricity in all areas of the globe not covered by a distribution grid and for all uses that require to be able to move their energy source. **iKUBE** can work even in the absence of sunshine offering the advantage of compactness, low noise, no fumes and fuel costs.
The batteries contained in the base are recharged by the photovoltaic generator which, with its surface of 2,25 m^2, develops a power up to 350 W.

iKUBE key features:

- **Cost Effective** - no fuel needed, low maintanence costs.
- **Easy to Transport** - optimized Power vs Volume ratio, “folded” mode for transportation.
- **Sustainable** - no fumes, no pollution, no noise.

F50: Electric Diagram



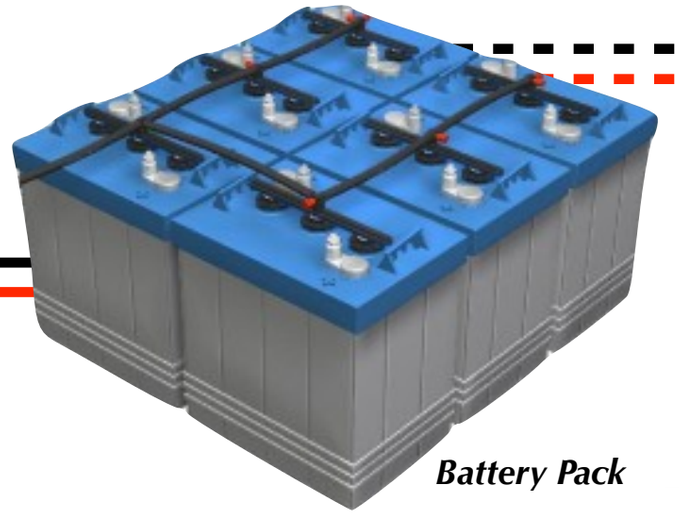
Photovoltaic Modules

Inverter + Charge Controller

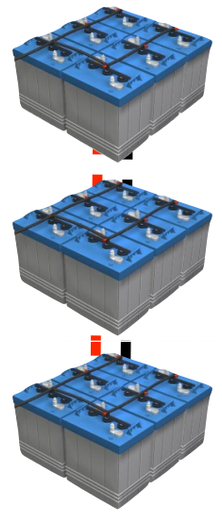
Vpanel

Ibat

Vbat



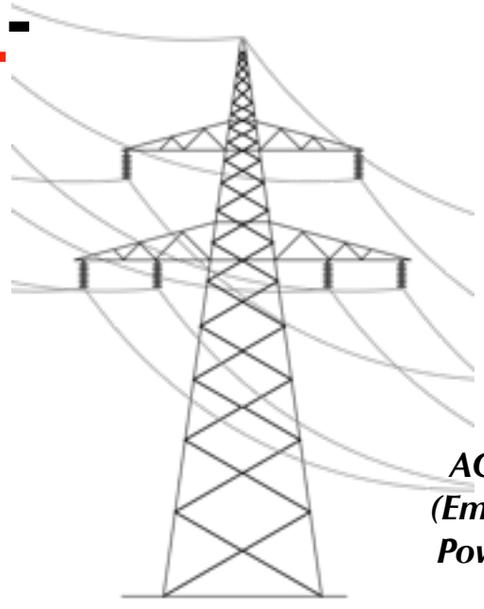
Battery Pack



Additional Battery Packs

Iload

Load



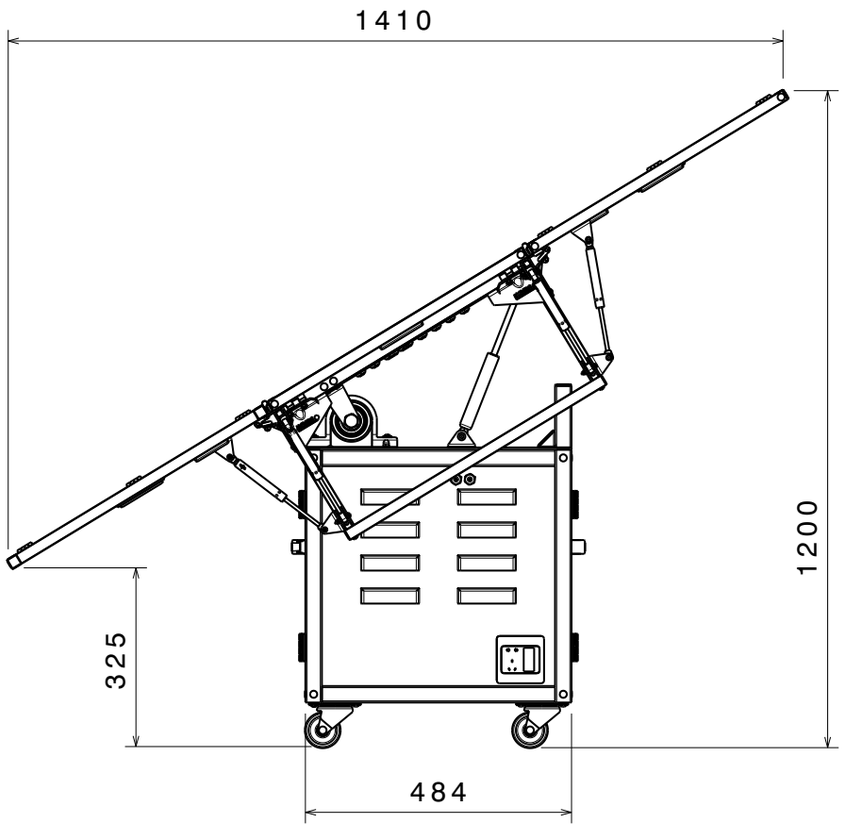
AC Power Source (Emergency back up Power Source from Grid)

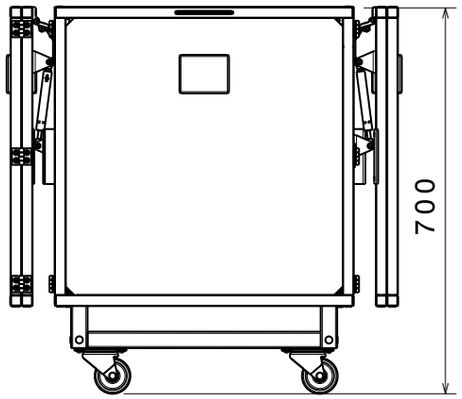
Appliances

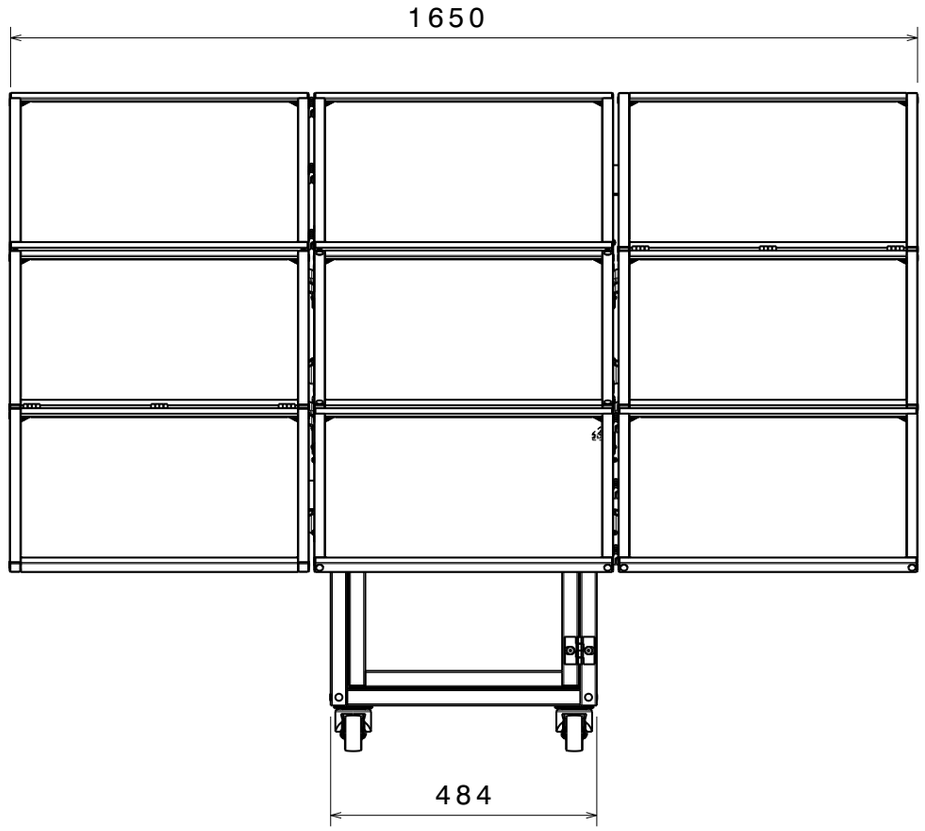
F50: Opening/Closing

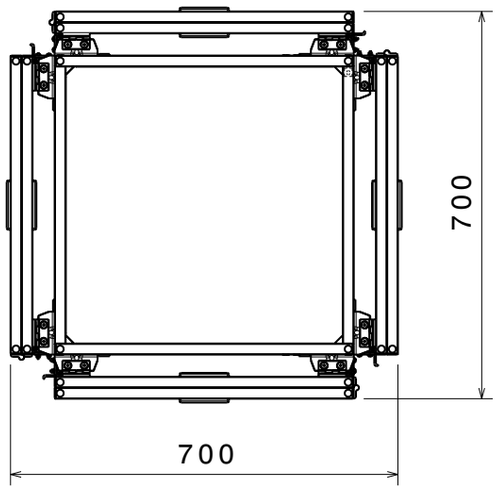
F50: Opening/Closing

F50: Dimensions









F50: Productivity/Autonomy

Irradiation values calculated considering the average monthly rainfall

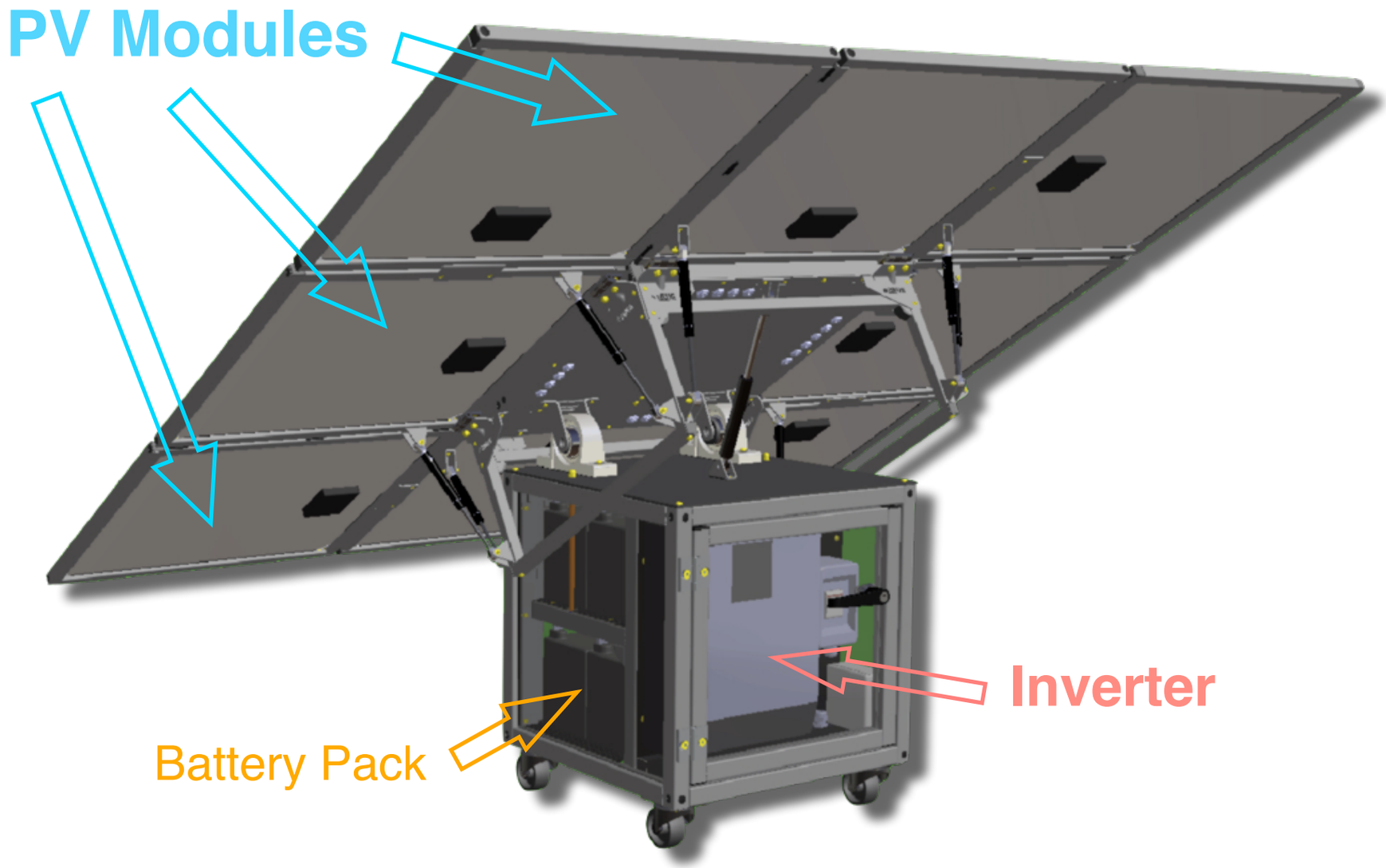
MONTH	ROMA		CASABLANCA	
	Monthly Production (kWh)	Daily Average (kWh)	Monthly Production (kWh)	Daily Average (kWh)
January	20,6	0,7	34,6	1,1
February	27,1	1	35,8	1,3
March	39,2	1,3	47,1	1,5
April	44,8	1,5	51,8	1,7
May	52,5	1,7	55,7	1,8
June	53,4	1,8	56,6	1,9
July	58,6	1,9	58,9	1,9
August	55,2	1,8	57,2	1,8
September	43,2	1,4	48,9	1,6
October	33,4	1,1	43,3	1,4
November	21,9	0,7	34,7	1,2
December	18,2	0,6	32	1
Yearly Production (kWh)	**468**		**557**	

Irradiation values calculated considering the presence of total sun

MONTH	ROMA		CASABLANCA	
	Monthly Production (kWh)	Daily Average (kWh)	Monthly Production (kWh)	Daily Average (kWh)
January	39,2	1,3	48,4	1,6
February	48,7	1,7	50,1	1,8
March	70,5	2,3	61,2	2
April	71,6	2,4	72,5	2,4
May	78,8	2,5	78	2,5
June	74,7	2,5	79,3	2,6
July	87,9	2,8	82,5	2,7
August	71,7	2,3	80	2,6
September	64,7	2,2	68,5	2,3
October	50,2	1,6	60,6	2
November	37,2	1,2	48,6	1,6
December	34,6	1,1	44,8	1,4
Yearly Production (kWh)	**730**		**775**	

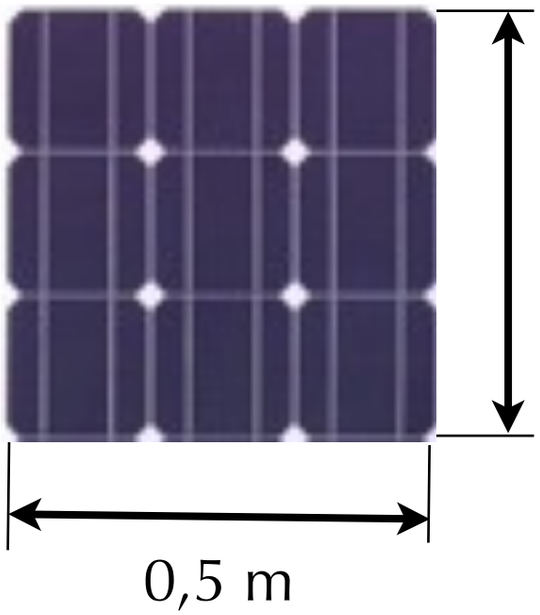
These results were obtained assuming an inclination angle of 30 degrees and an azimuth angle of 0 °

F50: Technical Characteristics



F50: Technical Characteristics

PV Modules



Frameless MONO Cristalline silicon PV Modules are assembled on the iKUBE structure.

Technical data	
Max power Pmax (W)	35
Max power voltage Vmp (V)	4,35
Max power current Imp (A)	8,78
Open circuit voltage Voc (V)	4,87
Short circuit current Isc (A)	9,57
Min warranted power Pmin (W)	34
Working tolerance (%)	+/- 3%
Max system voltage (V)	1000
Cell efficiency (%)	16,60
Module efficiency (%)	14,00
NOCT (°C)	41,32
Pmax temperature coefficient (%/°C)	-0,43
Voc temperature coefficient (%/°C)	-0,34
Isc temperature coefficient (%/°C)	0,03
Weight (kg)	3

Note 1: Standard conditions. Air mass 1.5, irradiance 1000 W/m^2, cell temperature 25 °C.
Note 2: Values indicated are nominal.

F50: Technical Characteristics

- Pure sine wave inverter
- 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
- Auto restart while AC is recovering
- Overload and short circuit protection
- Smart battery charger design for optimized battery performance
- Cold start function

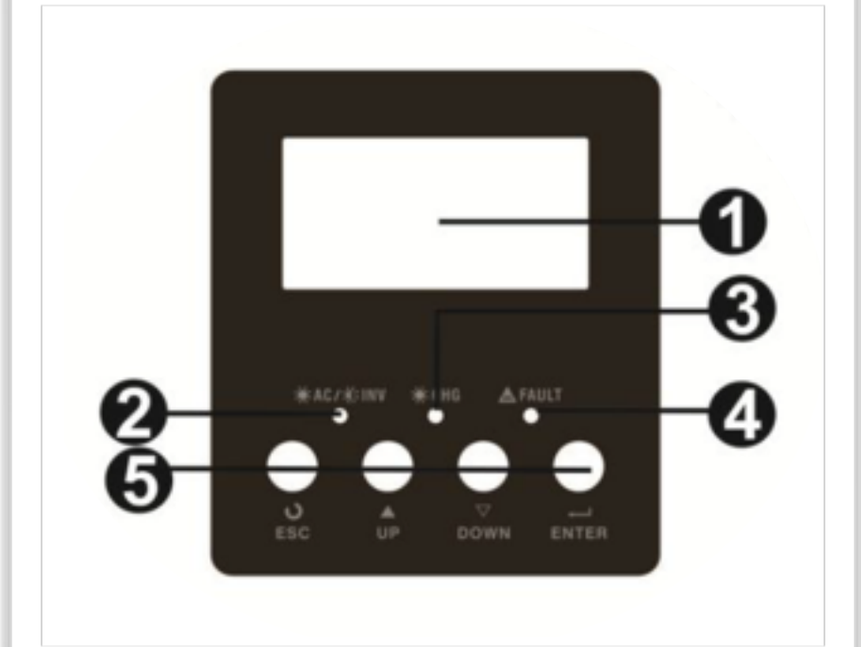
Inverter

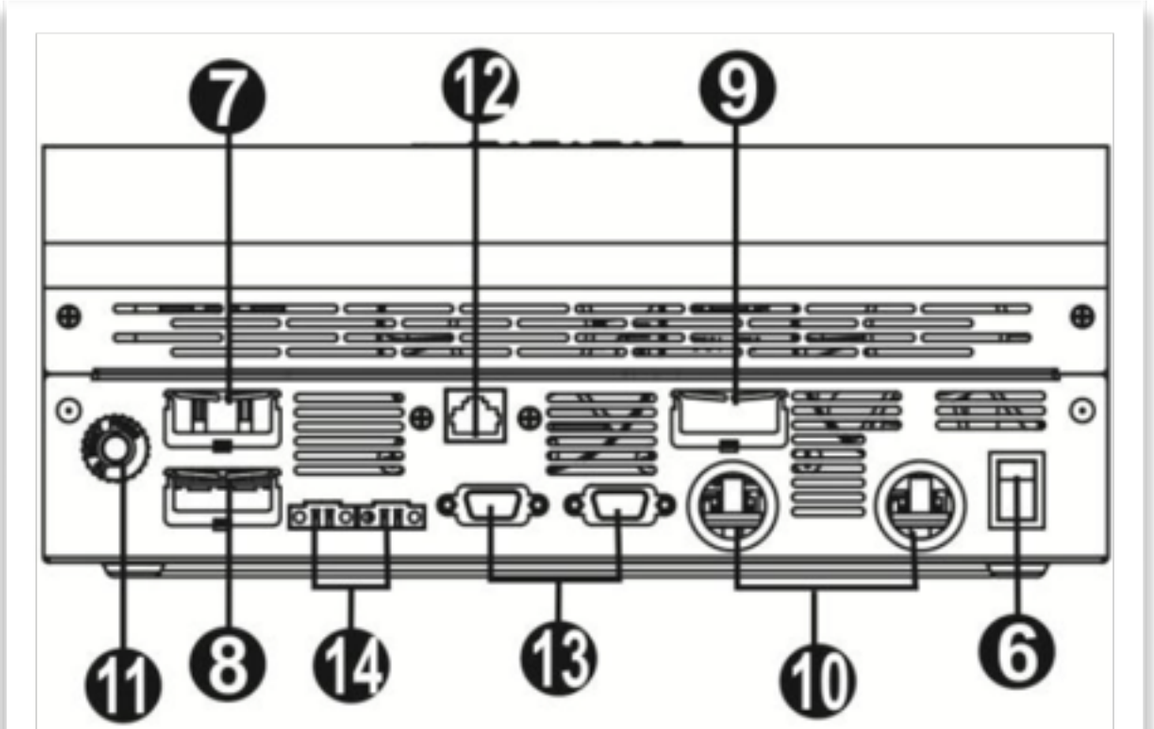
RATED POWER	1000VA/800W
INPUT	
Voltage	230 VAC
Selectable Voltage Range	170-280 VAC (For Personal Computers) ; 90-280 VAC (For Home Appliances)
Frequency Range	50 Hz/60 Hz (Auto sensing)
OUTPUT	
AC Voltage Regulation (Batt. Mode)	230VAC ± 5 %
Surge Power	2000VA
Efficiency (Peak)	93%
Transfer Time	10 ms (For Personal Computers); 20 ms (For Home Appliances)
Waveform	Pure sine wave
BATTERY & AC CHARGER	
Battery Voltage	12 VDC
Floating Charge Voltage	13,5 VDC
Overcharge Protection	15 VDC
Maximum Charge Current	10 A or 20 A
SOLAR CHARGER	
Maximum PV Array Open Circuit V	30VDC
Maximum Charging Current	50A
Standby Power Consumption	1 W
PHYSICAL	
Dimension, D x W x H (mm)	95 x 240 x 316
Net Weight (kgs)	5.0
OPERATING ENVIRONMENT	
Humidity	5% to 95% Relative Humidity(Non-condensing)
Operating Temperature	0°C - 55°C
Storage Temperature	-15°C - 60°C

F50: Technical Characteristics

Inverter

Overview



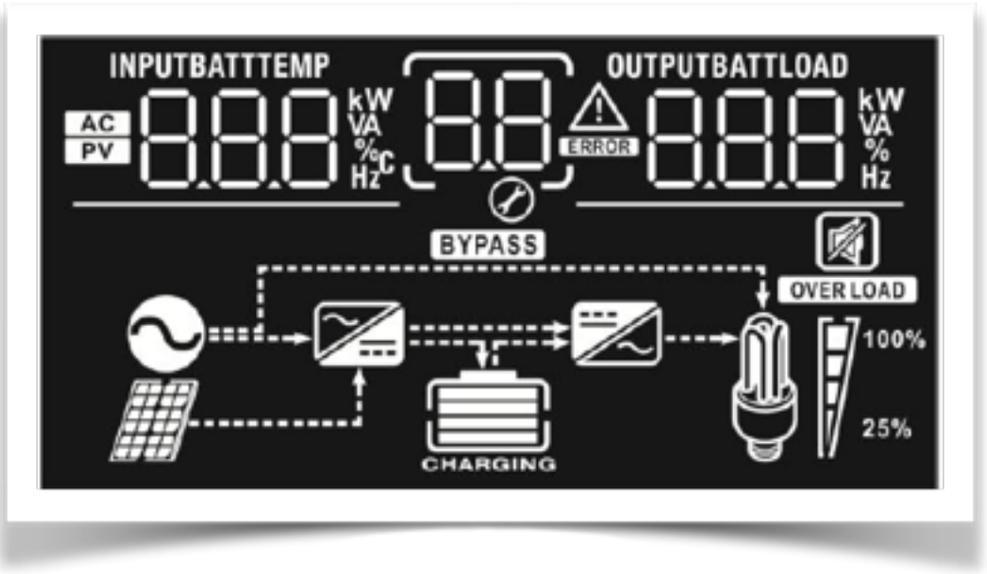


1. LCD display
2. Status indicator
3. Charging indicator
4. Fault indicator
5. Function buttons
6. Power on/off switch
7. AC input
8. AC output
9. PV input
10. Battery input
11. Circuit breaker
12. RS232 communication port
13. Parallel communication cable (only for parallel model)
14. Current sharing cable (only for parallel model)

F50: Technical Characteristics

Inverter

LCD Information



Load Information				
OVER LOAD	Indicates overload.			
100% 25%	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.			
BYPASS	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	
AC	Indicates the AC input.
PV	Indicates the PV input
INPUTBATT kW VA % °C Hz	Indicate input voltage, input frequency, PV voltage, battery voltage and charger current.
Configuration Program and Fault Information	
	Indicates the setting programs.
ERROR	Indicates the warning and fault codes. Warning: flashing with warning code. Fault: lighting with fault code
Output Information	
OUTPUTBATTLOAD kW VA % Hz	Indicate output voltage, output frequency, load percent, load in VA and load in Watt.
Battery Information	
CHARGING	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.

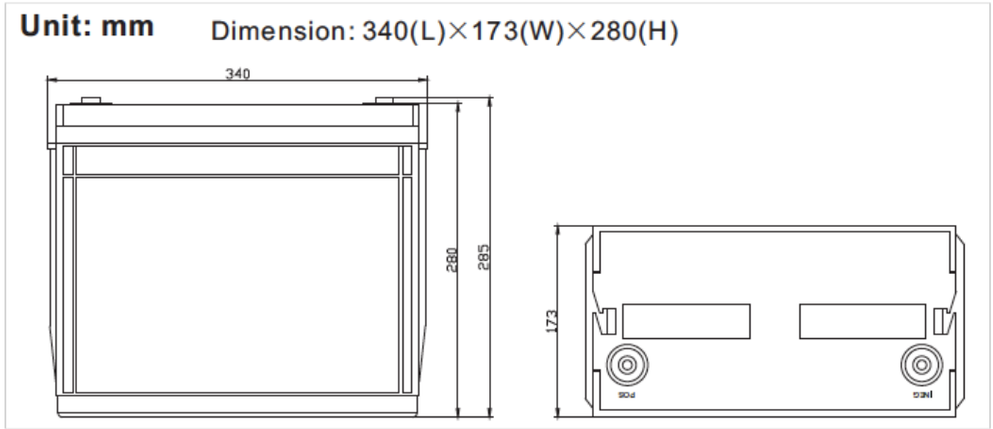
Status	Battery voltage	LCD Display
Constant Current mode / Constant Voltage mode	<2V/cell	4 bars will flash in turns.
	2 ~ 2.083V/cell	Bottom bar will be on and the other three bars will flash in turns.
	2.083 ~ 2.167V/cell	Bottom two bars will be on and the other two bars will flash in turns.
	> 2.167 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.

F50: Technical Characteristics

Battery Pack

DC 145 Ah C10 12V

x 2



Cells Per Unit	6
Voltage Per Unit	12
Capacity	145Ah@10hr-rate to 1.80V per cell @25°C
Weight	Approx. 44.0 Kg (Tolerance±1.5%)
Max. Discharge Current	1450 A (5 sec)
Internal Resistance	Approx. 4 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	13.6 to 13.8 VDC/unit Average at 25°C
Recommended Maximum Charging Current Limit	43.5 A
Equalization and Cycle Service	14.6 to 14.8 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 F5/F12
Container Material	A.B.S. UL94-HB, UL94-V0 Optional.

AGM Technology

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

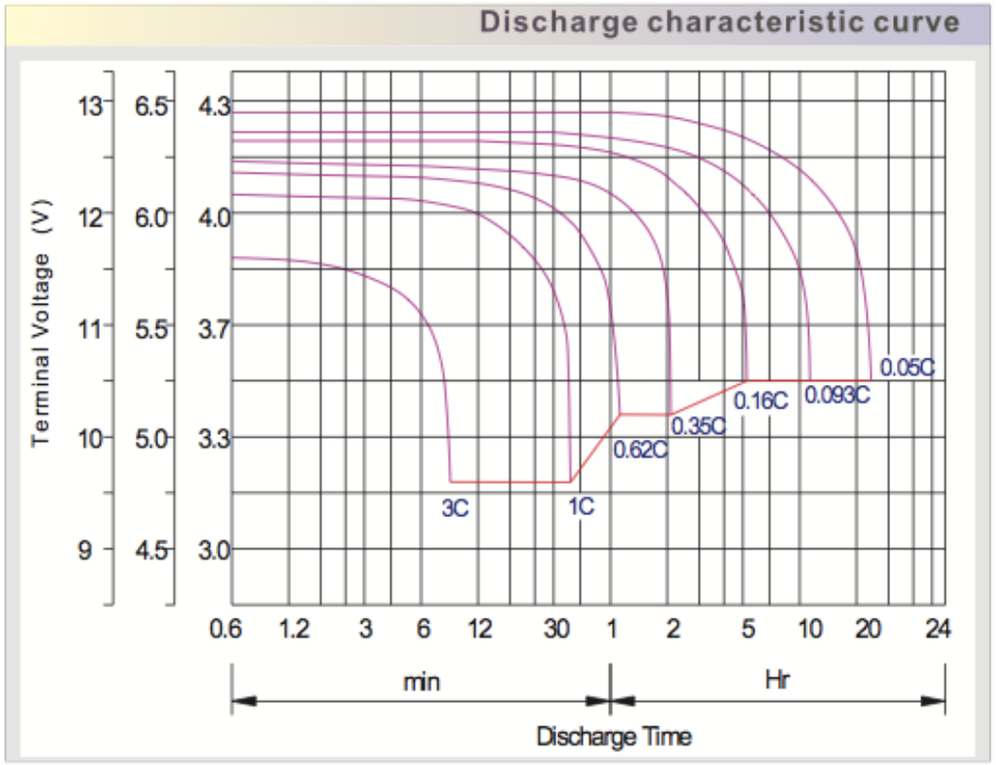
As a charging lead-acid battery nears full state of charge, hydrogen and oxygen gasses are produced by the reactions at the negative and positive plates, respectively.
In a flooded battery, these gasses escape from the battery through the vents, thus requiring periodic water additions.

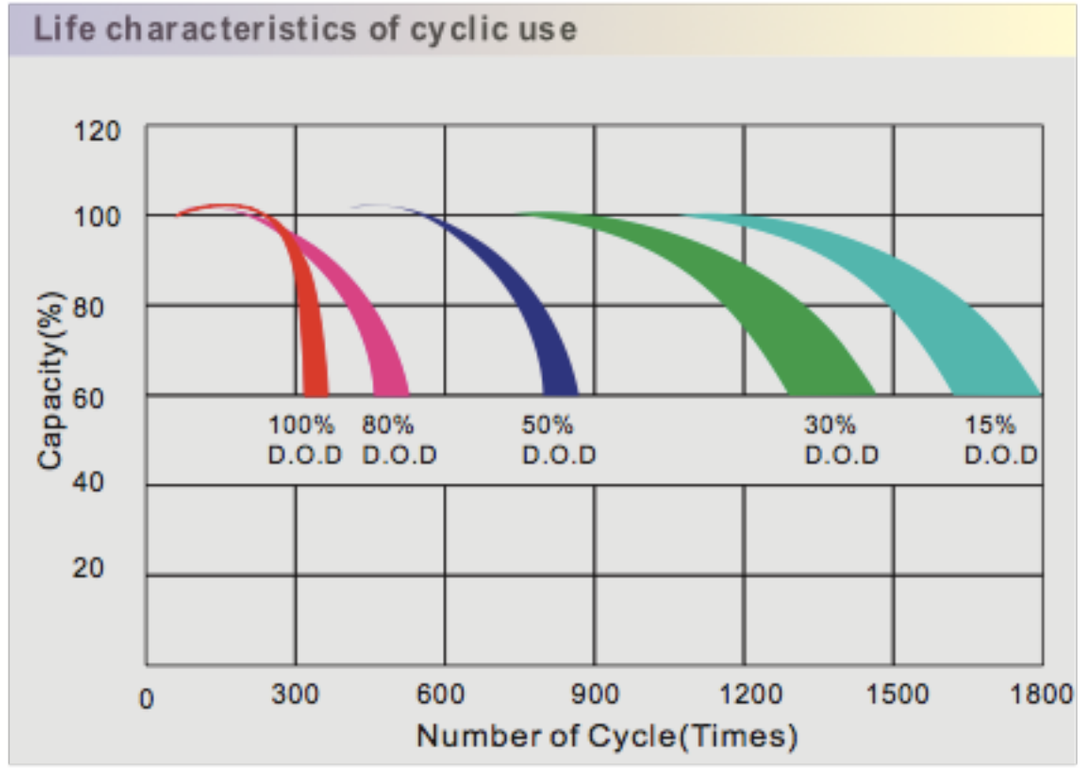
In an AGM battery the excellent ion transport properties of the liquid electrolyte held suspended in the glass mats, the oxygen molecules can migrate from the positive plate and recombine with the slowly evolving hydrogen at the negative plate and form water again. Under conditions of controlled charging,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

F50: 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%

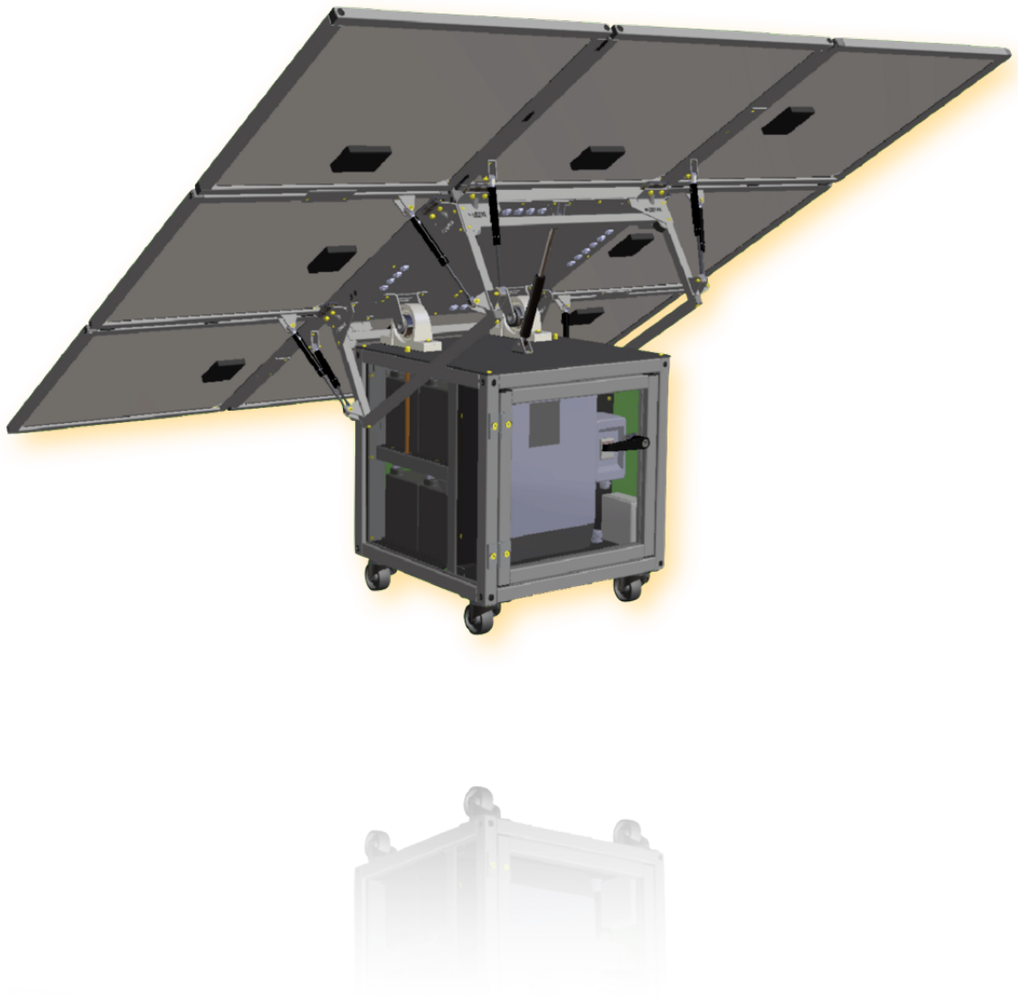
F50: Technical Characteristics

Battery Pack

Power (W)	*Remaining Hours*
50	95,7
100	40,6
150	24,6
300	10,4
500	5,5
800	3,1
1500	-

The above Datas are referred to the standard battery pack contained in the iKube.

F50: Technical Characteristics



iKUBE F50

Inverter Power	1.000 VA / 800 W
Dimensions	0,70x0,70x0,70 m
Weight	150 Kg
Autonomy (500 W load)	6 h
Battery Pack	24V 145 Ah
Generator Power	350 Wp
Photovoltaic surface	2,25 m^2

Product specifications are subject to change without further notice.

CONTACTS

Company: **PRO D3 Srl**

Address: **Via Ho Chi Min 12 – 60022 Castelfidardo (Ancona) - Italy**

Email: **info@ikube.it**

Web: **www.ikube.it**

Business Partner

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