

UFLEX

 **RENEWABLE ENERGY**

Solutions for grid-connected systems





ULTRAFLEX
Casella factory



ULTRAFLEX & UFLEX
Headquarter in Busalla



UFLEX USA
Headquarter in Sarasota



UCS - Ultraflex Control System
Borgo Fornari factory



UFLEX
Tregnago factory



IL - Industira di Leivi
Leivi factory



The Ultraflex Group has 89 years of experience in manufacturing and distributing the most innovative and high-quality products. The Ultraflex Group is affiliated with companies that design and manufacture widely known equipment in the alternative energy, marine, industrial, architectural and Led technology sectors.





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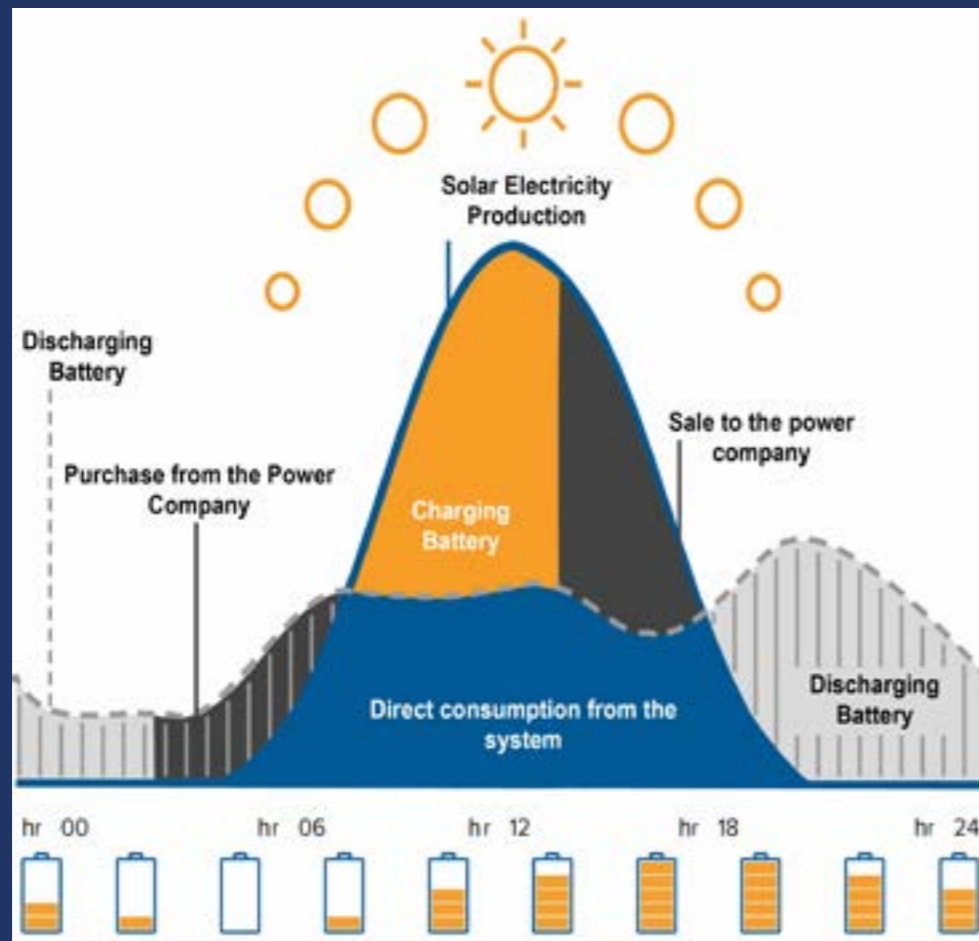
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HYBRID INVERTERS

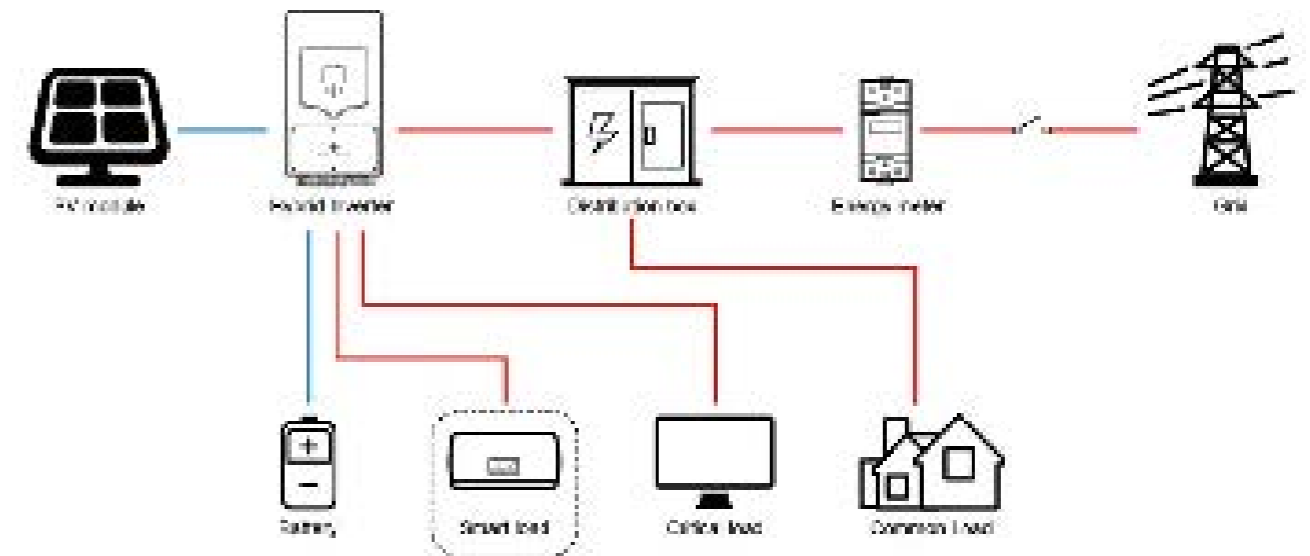
Innovative solutions for a more sustainable future

The UFLEX solution, which includes hybrid inverters and supercapacitor storage systems, casts its gaze toward a more sustainable, high-performance future. The UFLEX line is perfectly suited to pursue energy independence goals in both residential and commercial settings, starting from a 3kW single-phase configuration up to a 10kW three-phase configuration. UFLEX inverters are distinguished by:

- inverter and supercapacitor certification CEI-021
- innovative and high-performance products
- high degree of reliability
- easy installation and intuitive configuration.
- full anti-black out function (back-up power equal to rated power)
- stand-alone and zero input mode function



In combination with inverters, we find supercapacitor storage systems. These innovative systems, which have already been on the market for a few years, address the inherent problems of lithium batteries, eliminating fire hazards, memory effect, 100% depth of discharge, and have no temperature-related problems. In addition, they are parallelable and offer many other advantageous features. The entire UFLEX range offers comprehensive monitoring systems, accessible via Wi-Fi, LAN and Bluetooth, making the installation totally transparent to the eyes of users and installers. In addition, each system can be programmed and monitored remotely, without the need to travel to the installation site.



Maximum Efficiency:

UFLEX systems operate with precision in automating energy withdrawal from the grid, minimizing it and ensuring a continuous supply of energy even during possible blackouts.

Photovoltaic Field Oversizing:

UFLEX inverters are designed with the ability to accommodate more panels than their rated output. This results in a wider production curve throughout the day, with significant benefits in terms of expected production and self-consumption.

Total Connectivity:

Through the inverter's integrated Wi-Fi or LAN communication system, the system can be monitored very easily and programmed remotely, providing total control over efficiency and energy management.



UFLEX SINGLE-PHASE HYBRID INVERTER

HY-SP-3/3.6/5/6-IT



Certifications and standards

Grid Regulation CEI 0-21, VDE-AR-N 4105, NSR 097, IEC 62116, IEC 61727, G99, G98, VDE 016-1-1, RD1699, C10-11

Safety IEC/EN61000-6-1/2/3/4,
EMC/Standard IEC/EN 62109-1, IEC/EN 62109-2

Protection

Integrated

- Photovoltaic input lightning protection
- Anti-island protection
- Reverse polarity protection PV string input
- Insulation resistance detection
- Residual current monitoring unit
- Output overcurrent protection
- Output short-circuit protection
- Overvoltage protection

Output overvoltage protection CC Type II / CA Type III



Colored Touch LCD

Very quick and easy system programming.

16

16 Inverters in Parallel

On the same battery bank I can connect up to 16 inverters, both on-grid and off-grid.

140

High Current

Maximum charge/discharge current of 140A.

6

6 Stages of Battery

Charging/Discharging.



Supports the Management

Of a Diesel Generator.

BATTERY INPUT DATA

MODEL	HY-SP-3-IT	HY-SP-3.6-IT	HY-SP-5-IT	HY-SP-6-IT
Battery Type	Supercapacitors			
Battery Voltage Range (V)	40-60			
Max. Charging Current (A)	70	90	120	135
Max. Discharging Current (A)	70	90	120	135
External Temperature Sensor	YES			
Charging Curve	3 Phases/Equalization			
Charging Strategy for Li-Ion Battery	Self-adaption to BMS			

PV STRING INPUT DATA

Max.DC Input power (W)	3900	4680	6500	7800
Rated PV Input Voltage (V)	370 (125-500)			
Start-up Voltage (V)	125			
MPPT Voltage Range (V)	150-425			
Full Load DC Voltage Range (V)	300-425			
PV Input Current (A)	13		13+13	
Max.PV Isc(A)	17		17+17	
No.of MPP Trackers	1/1		2/1+1	
No.of Strings for MPP Trackers	1+1		2/1+1	

AC OUTPUT DATA

Nominal AC output and UPS power (VA)	3000	3600	5000	6000
Max. AC Output Power (W)	3300	3960	5500	6600
Nominal AC output current (A)	13.6/13	16.4/15.7	22.7/21.7	27.3/26.1
Max AC Current (A)	15/14.3	18/17.2	25/23.9	30/28.7
Max Continuous AC pass (A)		35		40
Peak power (off-grid)	2 times power rating, 10 S			
Power Factor	0.8 leading to 0.8 lagging			
Output frequency and voltage	50/60Hz;L/N/PE 220/230Vac (single-phases)			
Type of network	Single-phase			
Total harmonic distortion (THD)	<3% (Nominal Power)			
Continuous power supply	<5% In			

GENERAL DATA

Operating Temperature Range(°C)	-40 -60°C, >45°C downgrade
Cooling	Natural Cooling
Noise (dB)	<30dB
Communication with BMS	RS485; CAN
Weight (kg)	20,5
Cabinet Size (WxHxD mm)	238x433x330
Protection Degree	IP65
Installation Style	Wall-mounting
Warranty	10 years

EFFICIENCY

Max Efficiency	97.60%
Euro Efficiency	96.50%
MPPT Efficiency	99.90%

UFLEX THREE-PHASE HYBRID INVERTER

HY-TP- 5/6/8/10/12-IT

Certifications and standards

Grid Regulation	CEI 0-21, VDE-AR-N 4105, NSR 097, IEC 62116, IEC 61727, G99, G98, VDE 016-1-1, RD1699,C10-11
Safety	IEC/EN61000-6-1/2/3/4,
EMC/Standard	IEC/EN 62109-1, IEC/EN 62109-2

Protection

Integrated	Photovoltaic input lightning protection Anti-island protection Reverse polarity protection PV string input Insulation resistance detection Residual current monitoring unit Output overcurrent protection Output short-circuit protection Overvoltage protection
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Output overvoltage protection	CC Type II / CA Type III
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6

100% Unbalanced output
Each Phases Max. output up to 50% rated power.

10

10 Inverters in Parallel
On the same battery bank I can connect up to 10 inverters, both on-grid and off-grid.

240

Max. Current
Max. charging/discharging current of 240A

48

48V Low Voltage Battery

6

6 Stages of Battery
Charging/Discharging.



Supports the Management
Of a Diesel Generator.

BATTERY INPUT DATA

MODEL	HY-TP-5-IT	HY-TP-6-IT	HY-TP-8-IT	HY-TP-10-IT	HY-TP-12-IT
Battery Type	Supercapacitors				
Battery Voltage Range (V)	40-60				
Max. Charging Current (A)	120	150	190	210	240
Max. Discharging Current (A)	120	150	190	210	240
External Temperature Sensor	YES				
Charging Curve	3 Phases/Equalization				
Charging Strategy for Li-Ion Battery	Self-adaption to BMS				

PV STRING INPUT DATA

Max.DC Input power (W)	6500	7800	10400	13000	15600
Rated PV Input Voltage (V)	550 (160-800)				
Start-up Voltage (V)	160				
MPPT Voltage Range (V)	200-655				
Full Load DC Voltage Range (V)	350-650				
PV Input Current (A)	13+13			26+13	
Max.PV Isc(A)	17+17			34+17	
No.of MPP Trackers	2				
No.of Strings for MPP Trackers	1+1			2+1	

AC OUTPUT DATA

Rated AC Output and Active Power (W)	5000	6000	8000	10000	12000
Max. AC Output Active Power (W)	5500	6600	8800	11000	13200
AC output Rated current (A)	8.4/8	9.1/8.7	12.1/11.6	15.2/14.5	18.2/17.4
Max AC Output Current (A)	7.6/7.2	10/9.6	13.4/12.8	16.7/15.9	20/19.1
Max Three-phase Unbalanced Output Current (A)	11.4/10.9	13.6/13	18.2/17.4	22.7/21.7	27.3/26.1
Max Output short circuit current (A)	75				
Max Continuous AC passthrough (A)	45				
Peak power (off-grid)	2 times power rating, 10 S				
Power Factor	0.8 leading to 0.8 lagging				
Output frequency and voltage	50/60Hz; 3L/N/PE 220/380, 230/400Vac				
Type of network	Three-Phase				
Total harmonic distortion (THD)	<3% (Nominal Power)				
Continuous power supply	<0.5% In				

GENERAL DATA

Operating Temperature Range(°C)	-40 -60°C, >45°C derating				
Cooling	Smart Cooling				
Noise (dB)	<45dB				
Communication with BMS	RS485; CAN				
Weight (kg)	30.6				
Cabinet Size (WxHxD mm)	422x702x281 (Excluding Connectors and Brackets)				
Protection Degree	IP65				
Installation Style	Wall-mounting				
Warranty	10 years				

EFFICIENCY

Max Efficiency	97.60%				
Euro Efficiency	97%				
MPPT Efficiency	99.90%				

SUPERCAPACITOR STORAGE SYSTEM

ADVANTAGES OF HAVING A STORAGE SYSTEM

Storage using UFLEX products enables a significant increase in the percentage of self-consumption. Through storing the energy produced by photovoltaic panels in supercapacitors, it can be released during periods when there is no solar production, such as in the evening or at night. This eliminates the need to purchase additional energy from the national grid, providing several advantages:

1. **Maximum Independence:** Even in situations when the public grid is down, you can continue to use the energy produced sustainably. This provides a valuable level of autonomy, ensuring a constant supply of energy.
2. **Less Worry about Energy Cost Increases:** Self-consumption of produced energy reduces dependence on the variable costs of energy supplied by the national grid. This means greater economic stability and less worry about energy cost increases.
3. **Active Contribution to Energy Transition:** The production of clean energy represents a concrete and active engagement in the energy transition. By participating in this process, you contribute significantly to environmental sustainability by playing a key role in promoting renewable energy sources.

In summary, the use of UFLEX storage not only optimizes self-consumption, but also offers key benefits in terms of energy independence, economic stability, and positive contribution to the transition to more sustainable energy.

WHY CHOOSE SUPERCAPACITORS?

Supercapacitor-based storage systems are a safe, efficient and viable alternative to chemical batteries and surpass them in many applications.

EFFICIENCY	High forward and reverse efficiency from DC to DC
	Rated capacity = Usable capacity
SAFETY	No risk of thermal runaway
	No heat generation during the cycle
LONGEVITY	Long cycle and calendar duration
	No memory effect
	Self-discharge, in sleep mode, of 2% or less per month.
VERSATILITY	Wide ambient operating temperature range
	High C-rate capacity without affecting cycle life or capacity
	Commercially acceptable form factor for low, medium or high voltage applications
	Modular and scalable. Economical production plant.

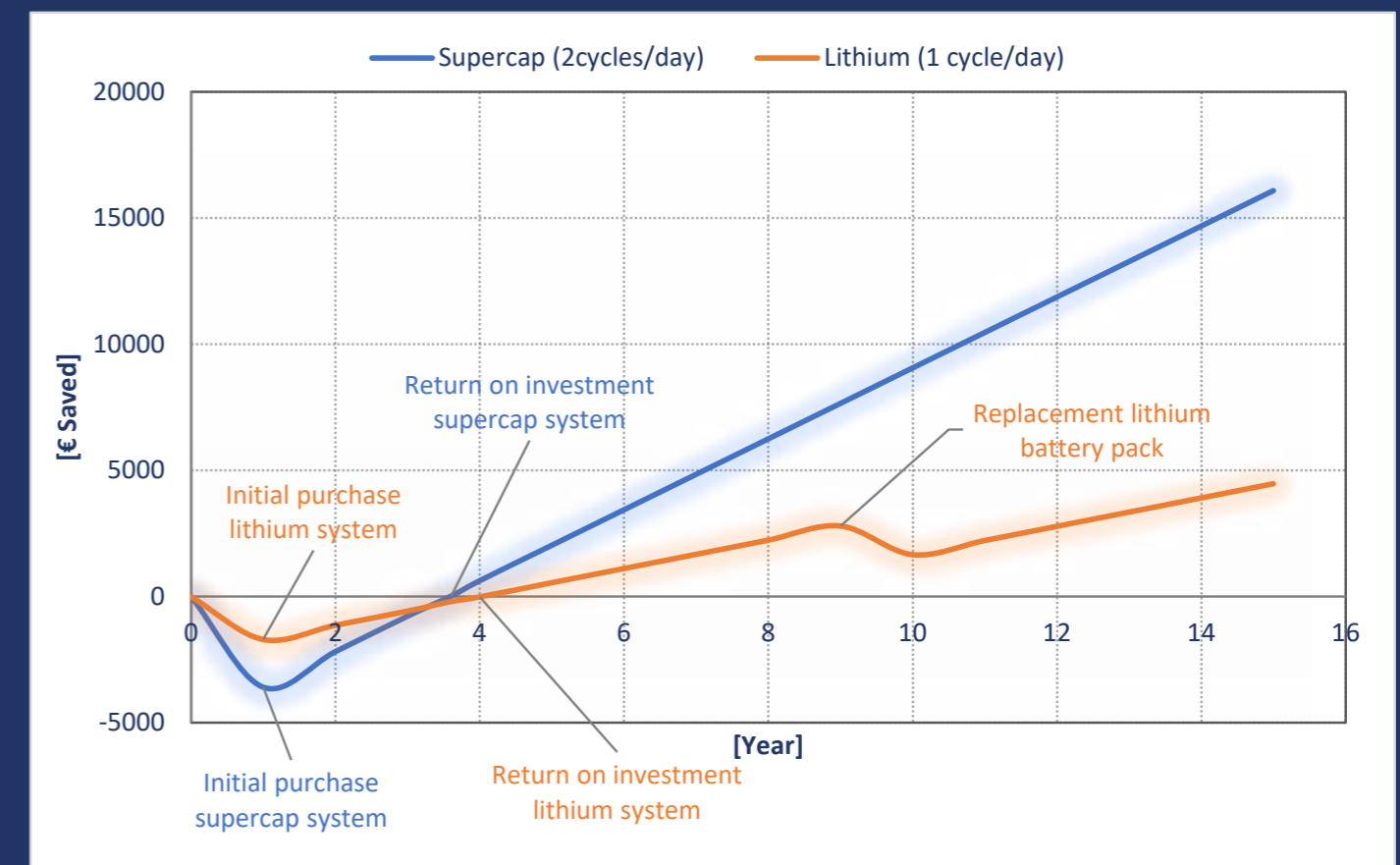
WHY CHOOSE SUPERCAPACITORS OVER TRADITIONAL BATTERIES?

Reduction in operating costs

- Reduction of oversizing to compensate for DOD, C-rate, ambient temperature, round-trip efficiency
- Reduction in safety infrastructure requirements
- Reduced disposal costs and environmental impact
- No cost in terms of maintenance
- Faster return on investment

Benefits

- Longer service life (>20'000 cycles)
- No memory effect: I can expand my storage whenever I want
- No problem with temperature, they work from -20 to 60°C
- 100% DOD, so there is no need to oversize the storage system.
- Very fast charging.
- Lower energy consumption during the life cycle



SUPERCAPACITOR UFLEX

UFSC48- 5.5 / 7.6 kWh



LATEST TECHNOLOGY SUPERCAP CELLS | EXTREME TEMPERATURE RANGE

SAFEST TECHNOLOGY | EASY TO INSTALL

ULTRALONG CYCLE LIFE | NO MAINTENANCE NEEDED

Bluetooth Display Function

This Bluetooth APP can be operated by both Android and IOS. It establish a Bluetooth connection between your smartphone and the battery.

Usage includes:

- Managing the battery pack
- Gathering the data and displaying them
- Conducting modifications on settings

BLUETOOTH APP CAN ACHIVE BELOW FUNCTIONS:

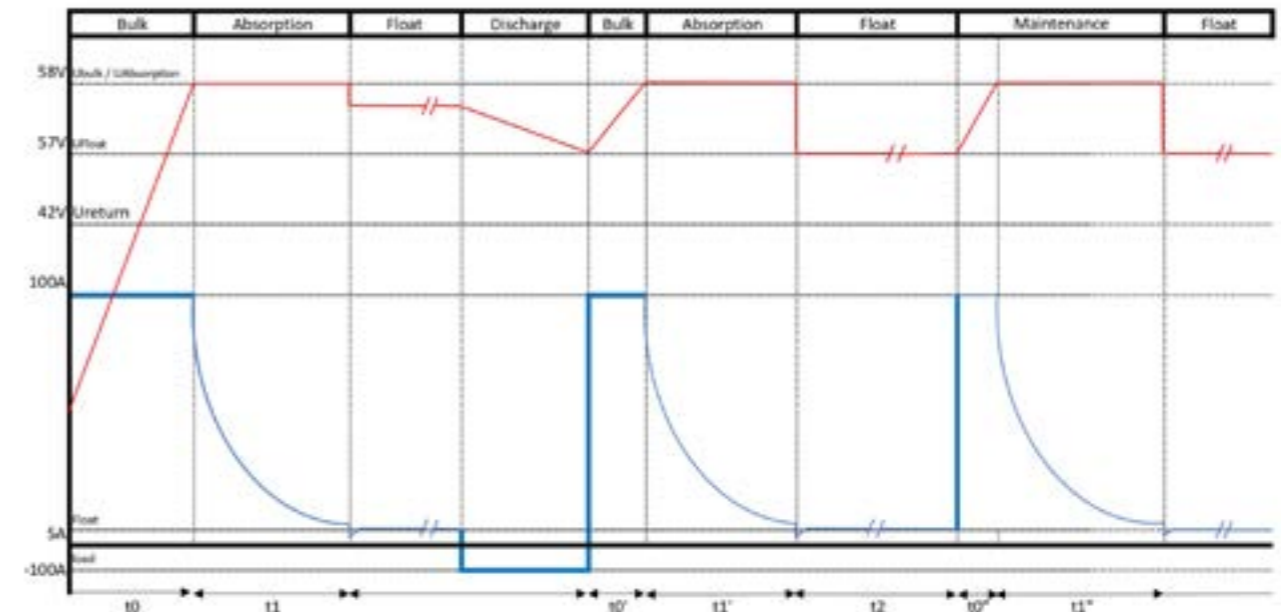
- Display the basic data of battery pack
- Modifying the communication between BMS and inverter
- Settings Alert Parameters and Switch on/off
- Support Single and Parallel operation

Enviromental Specifications

IP Rating	Indoor IP20
Operating Humidity	0-90% RH Non- considering
Charge Temperature	0°C ~ +55°C
Discharge Temperature	-20°C ~ +60°C
Storage Conditions	SOC>30%, -20°C ~+40°C, 25% ~ 95% RH, One full charge needed per two month
Transport Conditions	50% SOC, -20°C ~+40°C
IEC*2	IEC62619
Italy	CEI0-21:2022
CE	EN 62133:2013, EN 55032:2015+AC:2016, EN 55035:2017, EN 61000-3-2:2014,
Transport	UN38.3,MSDS
Enviromental	RoHS

Remark:*1 (1) At room temperature 25°C, charge-discharge at 100A. (2) Limited charge at 100A for resident energy storage, (3) At the beginning of *2on testing, certificate will come soon.

DATASHEET		
MODEL	UFSC48-5.5kWh	UFSC48-7.6kWh
Energy storage	5.5 kWh	7.6 kWh
Capacity	105Ah	147Ah
Nominal Voltage	48V/DC	
Max. Charge Voltage	58V/DC	
Discharge Cut-off Voltage	42V/DC	
ESR/AC @ 1KHz 50% SOC	<10m Ω	
Max. Continuous Charge Current	100A	
Max. Continuous Discharge Current	100A	
Cells Self-discharge Rate	2% per month	
Round Trip Efficiency	97.8%	
Projected cycle life (25°C)	20000 times	
Projected life (25°C)	15 years	
Reccommended Depth of Discharge	≤90%	
Maximum Depth of Discharge	100%	
Cooling Method	Natural	
Shell Material	Metal & ABS plastic	
Parallel Connection	Up to 16 sets	
Compatible Protocol	CAN, RS485	
Monitoring Data	System voltage, current, temperature, SOC, SOH, cycle, cell's voltage	
Dimensions (WxDxH)	470x462x170(mm)	470x520x170(mm)
Weight	38kg	50kg



Note: if the charger needs to set the floating charge voltage, it is recommended to set the U Float value to 57V

PHOTOVOLTAIC PANELS UFLEX

UFX430MM-T-M10



Junction box Class of protection: IP68 Safety level: class II Maximum system voltage: 1500V Withstands the harshest environments	Frame Great mechanical strength Resistant up to 5400Pa Available with an anodic oxidation layer resistant to chemical corrosion
Cell Size 182mm x 91mm	Resistance against extreme environmental conditions Resistant against ammonia and salt spray
SMBB Tecnology Improved light capture and current collection for better power output and reliability	Improved mechanical strength Certified to withstand: wind load (2400Pa) and snow load (5400Pa)
PID resistance Excellent Anti-PID performance ensured by mass production process and material control	

Available on request sizes from 410 to 700 Wp

UFXxxxMM-T-M10 (xxx= 410-620)

UFXxxxMM-P-G12 (xxx=490-670)

UFXxxxMM-T-G12 (xxx=510-700)

ELECTRIC DATA (STC)	
MODEL	UFX430MM-T-M10
Peak Power (Pmax)	430.00
Optimal Operating Voltage (Vmp)	31.88
Optimal Operating Power (Imp)	13.49
Open Circuit Voltage (Voc)	38.49 ± 3%
Short-Circuit Current (Isc)	14.23 ± 3%
Module efficiency	22.02
*STC: irradiated: 1000W/m ² ; AM 1.5; cell temperature of 25°C	
ELECTRIC DATA (NMOT)	
Peak Power (Pmax)	323.00
Optimal Operating Voltage (Vmp)	29.63
Optimal Operating Power (Imp)	10.91
Open Circuit Voltage (Voc)	36.56 ± 3%
Short-Circuit Current (Isc)	11.49 ± 3%
*NMOT: irradiated: 800W/m ² ; AM1.5; ambient temperature 20°C; wind speed 1 m/s	
TEMPERATURE AND MAXIMUM VALUES	
Maximum System Voltage (V)	1500V
Maximum Capacity of Series Fuses (A)	25V
Peak Power Tolerance	0 ~ +3W
Temperature Coefficient Pmax (W/°C)	-0.300%/°C
Temperature Coefficient Voc (V/°C)	-0.250%/°C
NMOT Nominal Operating Temperature of the Module (°C)	45 ± 2°C
Operating and Storage Temperature (°C)	-40 ~+85°C
MECHANICAL FEATURES	
Cell Type	182*91 N Type Mono
Number of Cells	108 (12*9)
Dimension	1722*1134*30 mm
Weight	21,50 Kg
Front Glass	3.2 mm high transmission, low iron content, tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68 3 diodes
Output cable	4 mm ² cable 140cm (MC4 connectors included)
Maximum Wind/Snow Load	2400Pa / 5400Pa
PACKAGING	
20FT container	6 pallets/222pz
40HQ container	26 pallets/962pz



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