

# MultiPlus Inverter/Charger

800 VA – 5 kVA

Lithium Ion battery compatible

[www.victronenergy.com](http://www.victronenergy.com)



**MultiPlus  
24/3000/70**

### Two AC Outputs

The main output has no break functionality. The MultiPlus takes over the supply to the connected loads in the event of a grid failure or when shore/generator power is disconnected. This happens so fast (less than 20 milliseconds) that computers and other electronic equipment will continue to operate without disruption. The second output is live only when AC is available on the input of the MultiPlus. Loads that should not discharge the battery, like a water heater for example can be connected to this output (second output available on models rated at 3 kVA and more).

### Virtually unlimited power thanks to parallel operation

Up to 6 Multis can operate in parallel to achieve higher power output. Six 24/5000/120 units, for example, will provide 25 kW / 30 kVA output power with 720 Amps charging capacity.

### Three phase capability

In addition to parallel connection, three units of the same model can be configured for three phase output. But that's not all: up to 6 sets of three units can be parallel connected for a huge 75 kW / 90 kVA inverter and more than 2000 Amps charging capacity.

### PowerControl - Dealing with limited generator, shore side or grid power

The MultiPlus is a very powerful battery charger. It will therefore draw a lot of current from the generator or shore side supply (nearly 10 A per 5 kVA Multi at 230 VAC). With the Multi Control Panel a maximum generator or shore current can be set. The MultiPlus will then take account of other AC loads and use whatever is extra for charging, thus preventing the generator or shore supply from being overloaded.

### PowerAssist - Boosting the capacity of shore or generator power

This feature takes the principle of PowerControl to a further dimension. It allows the MultiPlus to supplement the capacity of the alternative source. Where peak power is so often required only for a limited period, the MultiPlus will make sure that insufficient shore or generator power is immediately compensated for by power from the battery. When the load reduces, the spare power is used to recharge the battery.

### Solar energy: AC power available even during a grid failure

The MultiPlus can be used in off grid as well as grid connected PV and other alternative energy systems. Loss of mains detection software is available.

### System configuring

- In case of a stand-alone application, if settings have to be changed, this can be done in a matter of minutes with a DIP switch setting procedure.
- Parallel and three phase applications can be configured with VE.Bus Quick Configure and VE.Bus System Configurator software.
- Off grid, grid interactive and self-consumption applications, involving grid-tie inverters and/or MPPT Solar Chargers can be configured with Assistants (dedicated software for specific applications).

### On-site Monitoring and control

Several options are available: Battery Monitor, Multi Control Panel, Color Control GX or other GX devices, smartphone or tablet (Bluetooth Smart), laptop or computer (USB or RS232).

### Remote Monitoring and control

Color Control GX or other GX devices.

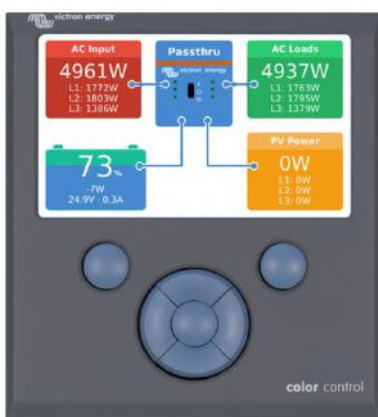
Data can be stored and displayed on our VRM (Victron Remote Management) website, free of charge.

### Remote configuring

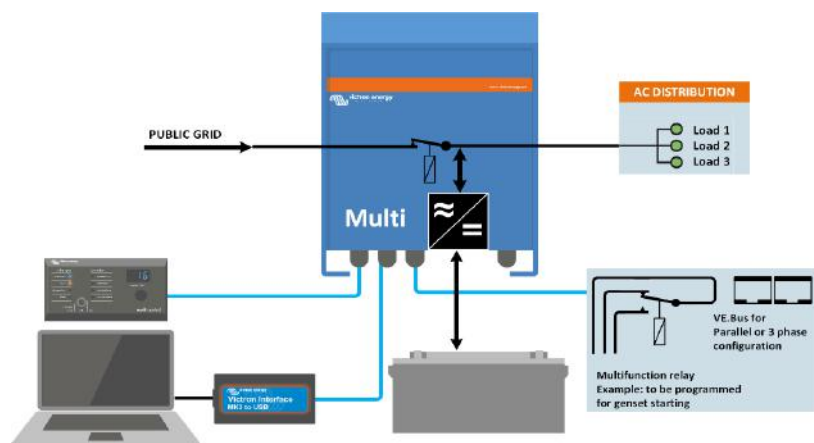
When connected to the Ethernet, systems with a Color Control GX or other GX device can be accessed and settings can be changed remotely.



**MultiPlus Compact  
12/2000/80**



**Color Control GX, showing a  
PV application**



MultiPlus	12 Volt 24 Volt 48 Volt	C 12/800/35 C 24/ 800/16	C 12/1200/50 C 24/1200/25	C 12/1600/70 C 24/1600/40	C 12/2000/80 C 24/2000/50	12/3000/120 24/3000/70 48/3000/35	24/5000/120 48/5000/70
PowerControl		Yes	Yes	Yes	Yes	Yes	Yes
PowerAssist		Yes	Yes	Yes	Yes	Yes	Yes
Transfer switch (A)		16	16	16	30	16 or 50	100
<b>INVERTER</b>							
Input voltage range (V DC)		9,5 – 17 V		19 – 33 V	38 – 66 V		
Output		Output voltage: 230 VAC ± 2%			Frequency: 50 Hz ± 0,1% (1)		
Cont. output power at 25°C (VA) (3)		800	1200	1600	2000	3000	5000
Cont. output power at 25°C (W)		700	1000	1300	1600	2400	4000
Cont. output power at 40°C (W)		650	900	1200	1400	2200	3700
Cont. output power at 65°C (W)		400	600	800	1000	1700	3000
Peak power (W)		1600	2400	3000	4000	6000	10.000
Maximum efficiency (%)		92 / 94	93 / 94	93 / 94	93 / 94	93 / 94 / 95	94 / 95
Zero load power (W)		8 / 10	8 / 10	8 / 10	9 / 11	20 / 20 / 25	30 / 35
Zero load power in AES mode (W)		5 / 8	5 / 8	5 / 8	7 / 9	15 / 15 / 20	25 / 30
Zero load power in Search mode (W)		2 / 3	2 / 3	2 / 3	3 / 4	8 / 10 / 12	10 / 15
<b>CHARGER</b>							
AC Input		Input voltage range: 187-265 VAC		Input frequency: 45 – 65 Hz	Power factor: 1		
Charge voltage 'absorption' (V DC)		14,4 / 28,8 / 57,6					
Charge voltage 'float' (V DC)		13,8 / 27,6 / 55,2					
Storage mode (V DC)		13,2 / 26,4 / 52,8					
Charge current house battery (A) (4)		35 / 16	50 / 25	70 / 40	80 / 50	120 / 70 / 35	120 / 70
Charge current starter battery (A)		4 (12 V and 24 V models only)					
Battery temperature sensor		yes					
<b>GENERAL</b>							
Auxiliary output (5)		n. a.	n. a.	n. a.	n. a.	Yes (16A)	Yes (50A)
Programmable relay (6)		Yes					
Protection (2)		a - g					
VE.Bus communication port		For parallel and three phase operation, remote monitoring and system integration					
General purpose com. port		n. a.	n. a.	n. a.	n. a.	Yes	Yes
Remote on-off		Yes					
Common Characteristics		Operating temp. range: -40 to +65°C (fan assisted cooling) Humidity (non-condensing): max 95%					
<b>ENCLOSURE</b>							
Common Characteristics		Material & Colour: aluminium (blue RAL 5012)			Protection category: IP 21		
Battery-connection		battery cables of 1.5 meter		M8 bolts	Four M8 bolts (2 plus and 2 minus connections)		
230 V AC-connection		G-ST18i connector		Spring-clamp	Screw terminals 13 mm <sup>2</sup> (6 AWG)		M6 bolts
Weight (kg)		10	10	10	12	18	30
Dimensions (hwxwd in mm)		375x214x110		520x255x125	362x258x218		444x328x240
<b>STANDARDS</b>							
Safety		EN-IEC 60335-1, EN-IEC 60335-2-29, IEC 62109-1					
Emission, Immunity		EN 55014-1, EN 55014-2, EN-IEC 61000-3-2, EN-IEC 61000-3-3, IEC 61000-6-1, IEC 61000-6-2, IEC 61000-6-3					
Road vehicles		12V and 24V models: ECE R10-4					
Anti-islanding		See our website					

1) Can be adjusted to 60 Hz; 120 V 60 Hz on request

2) Protection key:

- a) output short circuit
- b) overload
- c) battery voltage too high
- d) battery voltage too low
- e) temperature too high
- f) 230 VAC on inverter output
- g) input voltage ripple too high

3) Non-linear load, crest factor 3:1

4) At 25°C ambient

- 5) Switches off when no external AC source available
- 6) Programmable relay that can a.o. be set for general alarm, DC under voltage or genset start/stop function  
AC rating: 230 V/4A  
DC rating: 4 A up to 35 VDC, 1 A up to 60 VDC

## Computer controlled operation and monitoring

Several interfaces are available:



### Digital Multi Control Panel

A convenient and low cost solution for remote monitoring, with a rotary knob to set PowerControl and PowerAssist levels.



### Color Control GX or other GX device

Provides monitor and control. Locally, and also remotely on the [VRM Portal](#).



### BMV-712 Smart Battery Monitor

Use a smartphone or other Bluetooth enabled device to:

- customize settings,
- monitor all important data on single screen,
- view historical data, and to
- update the software when new features become available.



### VE.Bus Smart Dongle

Measures battery voltage and temperature and allows monitoring and control of Multis and Quattros with a smartphone or other

Bluetooth enabled device.



### MK3-USB VE.Bus to USB interface

Connects to a USB port ([see 'A guide to VEConfigure'](#))

### VE.Bus to NMEA 2000 interface

Connects the device to a NMEA2000 marine electronics network. See the [NMEA2000 & MFD integration guide](#)



## 380W PERC Half-Cell Module JAM72S03 360-380/PR Series

### Introduction

Assembled with high-efficiency PERC cells, the half-cell configuration of the modules offers the advantages of higher power output, better temperature-dependent performance, reduced shading effect on the energy generation, lower risk of hot spot, as well as enhanced tolerance for mechanical loading.



Higher output power



Lower temperature coefficient



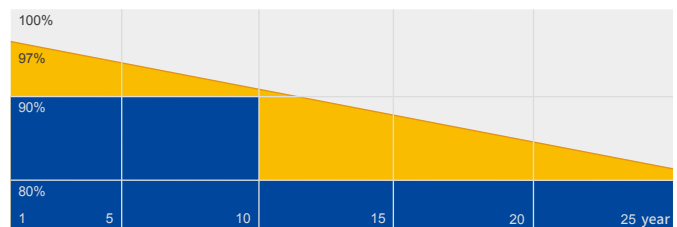
Less shading effect



Better mechanical loading tolerance

### Superior Warranty

- 12-year product warranty
- 25-year linear power output warranty



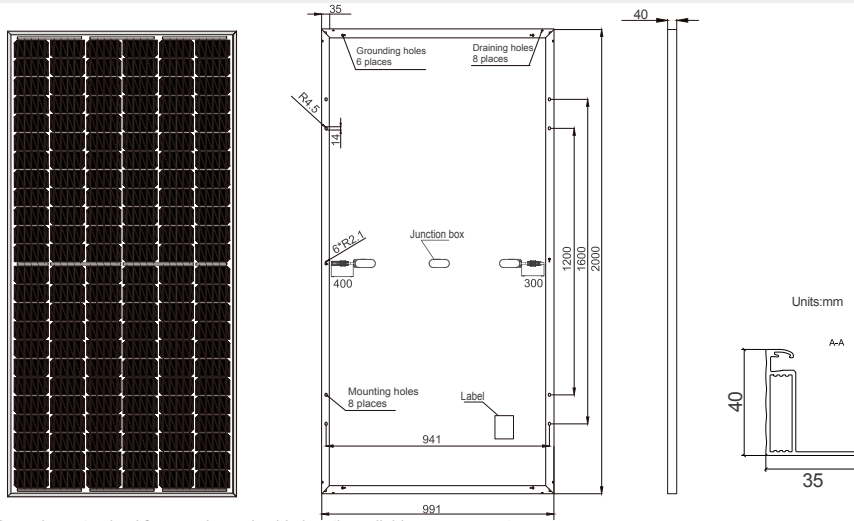
■ JA Linear Power Warranty ■ Industry Warranty

### Comprehensive Certificates

- IEC 61215, IEC 61730, IEC TS 62804, IEC 61701, IEC 62716, IEC 60068-2-68
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- OHSAS 18001: 2007 Occupational health and safety management systems
- IEC TS 62941: 2016 Terrestrial photovoltaic (PV) modules – Guidelines for increased confidence in PV module design qualification and type approval



MECHANICAL DIAGRAMS



Remark: customized frame color and cable length available upon request

SPECIFICATIONS

Cell	Mono
Weight	22.5kg±3%
Dimensions	2000mm×991mm×40mm
Cable Cross Section Size	4mm <sup>2</sup>
No. of cells	144 (6×24)
Junction Box	IP68, 3 diodes
Connector	MC4 Compatible(1000V) QC 4.10-35(1500V)
Packaging Configuration	27 Per Pallet

ELECTRICAL PARAMETERS AT STC

TYPE	JAM72S03 -360/PR	JAM72S03 -365/PR	JAM72S03 -370/PR	JAM72S03 -375/PR	JAM72S03 -380/PR
Rated Maximum Power(Pmax) [W]	360	365	370	375	380
Open Circuit Voltage(Voc) [V]	46.98	47.30	47.56	47.78	48.05
Maximum Power Voltage(Vmp) [V]	38.73	39.05	39.36	39.58	39.80
Short Circuit Current(Isc) [A]	9.87	9.92	9.97	10.03	10.09
Maximum Power Current(Impp) [A]	9.30	9.35	9.41	9.48	9.55
Module Efficiency [%]	18.2	18.4	18.7	18.9	19.2
Power Tolerance	0~+5W				
Temperature Coefficient of Isc(α <sub>Isc</sub> )	+0.051%/°C				
Temperature Coefficient of Voc(β <sub>Voc</sub> )	-0.289%/°C				
Temperature Coefficient of Pmax(γ <sub>Pmp</sub> )	-0.360%/°C				
STC	Irradiance 1000W/m <sup>2</sup> , cell temperature 25°C, AM1.5G				

Remark: Electrical data in this catalog do not refer to a single module and they are not part of the offer.They only serve for comparison among different module types.

ELECTRICAL PARAMETERS AT NOCT

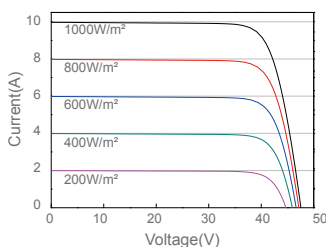
TYPE	JAM72S03 -360/PR	JAM72S03 -365/PR	JAM72S03 -370/PR	JAM72S03 -375/PR	JAM72S03 -380/PR
Rated Max Power(Pmax) [W]	266	270	274	278	281
Open Circuit Voltage(Voc) [V]	43.48	43.80	44.06	44.28	44.51
Max Power Voltage(Vmp) [V]	35.81	36.11	36.37	36.59	36.81
Short Circuit Current(Isc) [A]	7.90	7.94	7.98	8.02	8.08
Max Power Current(Impp) [A]	7.44	7.48	7.53	7.58	7.64
NOCT	Irradiance 800W/m <sup>2</sup> , ambient temperature 20°C, wind speed 1m/s, AM1.5G				

OPERATING CONDITIONS

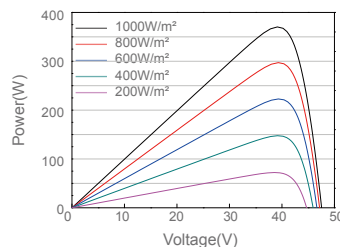
Maximum System Voltage	1000V/1500V DC(IEC)
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	30A
Maximum Static Load,Front	5400Pa
Maximum Static Load,Back	2400Pa
NOCT	45±2°C
Application Class	Class A

CHARACTERISTICS

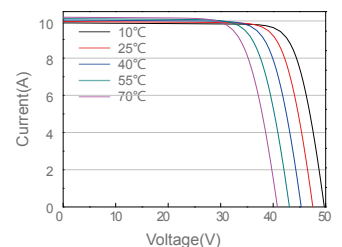
Current-Voltage Curve JAM72S03-370/PR



Power-Voltage Curve JAM72S03-370/PR



Current-Voltage Curve JAM72S03-370/PR





## Specification



Basic Parameters	US2000C	US3000C	Phantom-S
Nominal Voltage (V)	48	48	48
Nominal Capacity (Wh)	2400	3552	2400
Usable Capacity (Wh)	2280	3374.4	2200
Dimension (mm)	442*410*89	442*420*132	440*440*88.5
Weight (Kg)	24	32	24
Discharge Voltage (V)	44.5 ~ 53.5	44.5 ~ 53.5	44.5 ~ 53.5
Charge Voltage (V)	52.5 ~ 53.5	52.5~53.5	52.5~53.5
Charge / Discharge Current (A)	25(Recommend)	37 (Recommend)	25(Recommend)
	50 (Max)	74 (Max)	50 (Max)
	90 (Peak@15s)	90 (Peak@15s)	100 (Peak@15s)
Communication Port	RS485, CAN	RS485, CAN	RS485, CAN
Single string quantity(pcs)	16	16	8
Working Temperature/°C	0~50	0~50	0~50
Shelf Temperature/°C	-20~60	-20~60	-20~60
Humidity	5%~95%	5%~95%	5%~95%
Altitude (m)	<2000	<2000	<2000
Design life	15 <sup>+</sup> Years (25°C/77°F)	15 <sup>+</sup> Years (25°C/77°F)	15 <sup>+</sup> Years (25°C/77°F)
Cycle Life	>6000, 25 C	>6000, 25 C	>6000, 25 C
Authentication Level	IEC62619/CE /UN38.3	VDE2510-50/IEC62619/UL1973 UL9540A/CE/UN38.3	IEC62619/CE /UN38.3
Feature	Pre-Charge Dual-active protection Flexible current steps Dry contact wake up	Pre-Charge Dual-active protection Flexible current steps Dry contact wake up	

# VICTRON ENERGY LIMITED WARRANTY POLICY REV 03

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Victron Energy warrants its products to be free from defects in workmanship and materials for a period of 5 years from the date of purchase by the end user, with a maximum of 66 months from the Victron Energy invoice date. Exceptions on this are: lead acid batteries; 2 years from date of purchase by the end user, with a maximum of 30 months from the Victron Energy invoice date, Lithium-ion batteries; 3 years from date of purchase by the end user. In addition to this proof of correct battery usage is required when making a battery warranty claim.

During this period, Victron Energy will, at its option, repair or replace the defective product free of charge. The warranty does not include performing or reimbursing de-installation, transportation and re-installation. This warranty will be considered void if the unit has suffered any physical damage or alteration, either internally or externally, and does not cover damages arising from improper use like:

- Reverse of battery polarity.
- Inadequate connection.
- Mechanical shock or deformation.
- Contact with liquid or oxidation by condensation.
- Use in inappropriate environment (dust, corrosive vapor, humidity, high temperature, biological infestation...).
- Breakage or damage due to lightning.
- Connection terminals and screws destroyed or other damages, like overheat, due to insufficient tightening.
- For any electrical breakage except due to lightning (reverse polarity, over-voltage due to external cause), the state of the internal control diode and of the inputs/output X and Y capacitors determine the warranty.

This warranty will not apply where the product has been misused, neglected, improperly installed, or repaired by anyone else than Victron Energy or one of its authorized qualified Service Partners. In order to qualify for the warranty, the product must not be disassembled or modified.

Repair or replacement are our sole remedies and Victron Energy shall not be liable for damages, whether direct, incidental, special, or consequential, even caused by negligence or fault.

Victron Energy owns all parts removed from repaired products. Victron Energy uses new or reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Victron Energy repairs or replaces a part of a product, its warranty term is not extended. In case of replacement the new component has a warranty of 6 months, without effect on the initial warranty period.

All remedies and the measure for damages are limited to the above.

Victron Energy shall in no event be liable for consequential, incidental, contingent or special damages, even if having been advised of the probability of such damages. Any and all other warranties expressed or implied arising by law, course of dealing, course of performance, usage of trade or otherwise, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited in duration to a period of two (2) years from the date of purchase.

## **Life Support Policy**

As a general policy, Victron Energy, does not recommend the use of any of its products in life support applications where failure or malfunction of the Victron Energy's product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. Victron Energy does not recommend the use of any of its products in direct patient care. Victron Energy will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to Victron Energy that the risks of injury or damage have been minimized, the customer assumes all such risks, and the liability of Victron Energy is adequately protected under the circumstances.

As a product requires service, it must be brought back to the place of purchase. In case no contact can be taken with the merchant, or if he is either unable or not allowed to provide service, direct contact should be taken with Victron Energy.

## **Warranty on repairs**

The warranty period on products or on printed circuits boards repaired by Victron Energy as well as on printed circuit boards for replacement is 6 months from delivery by Victron Energy.

## **Transport**

It is the responsibility of the sender to sufficiently package these products. The transport must be organized in a way to avoid any damage, especially when a single unit or heavy unit is sent.

## **Severability**

If a part of the terms and conditions set out above is held invalid, void or unenforceable due to any national or international legislation, it shall not affect other parts of the terms and conditions remaining.