Quattro Inverter/Charger

3kVA - 10kVA Lithium Ion battery compatible

www.victronenergy.com

Quattro
48/5000/70-100/100

Quattro
24/3000/70-50/50

Two AC inputs with integrated transfer switch

The Quattro can be connected to two independent AC sources, for example the public grid and a generator, or two generators. The Quattro will automatically connect to the active source.

Two AC Outputs

The main output has no-break functionality. The Quattro 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 one of the inputs of the Quattro. Loads that should not discharge the battery, like a water heater for example can be connected to this output.

Virtually unlimited power thanks to parallel operation

Up to 6 Quattro units can operate in parallel. Six units 48/10000/140, for example, will provide 54 kW / 60 kVA output power and 840 Amps charging capacity.

Three phase capability

Three units can be configured for three phase output. But that's not all: up to 6 sets of three units can be parallel connected to provide 162 kW / 180 kVA inverter power and more than 2500 A charging capacity.

PowerControl – Dealing with limited generator, shoreside or grid power

The Quattro is a very powerful battery charger. It will therefore draw a lot of current from the generator or shoreside supply (16 A per 5 kVA Quattro at 230 VAC). A current limit can be set on each AC input. The Quattro will then take account of other AC loads and use whatever is spare for charging, thus preventing the generator or mains supply from being overloaded.

PowerAssist – Boosting shore or generator power

This feature takes the principle of PowerControl to a further dimension allowing the Quattro to supplement the capacity of the alternative source. Where peak power is so often required only for a limited period, the Quattro will make sure that insufficient mains 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 Quattro 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

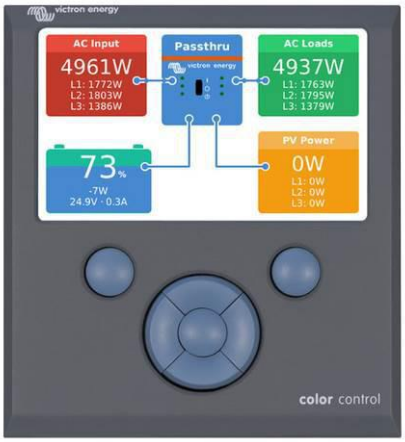
Several options are available: Battery Monitor, Multi Control Panel, Ve.Net Blue Power panel, Color Control panel, smartphone or tablet (Bluetooth Smart), laptop or computer (USB or RS232).

Remote Monitoring and control

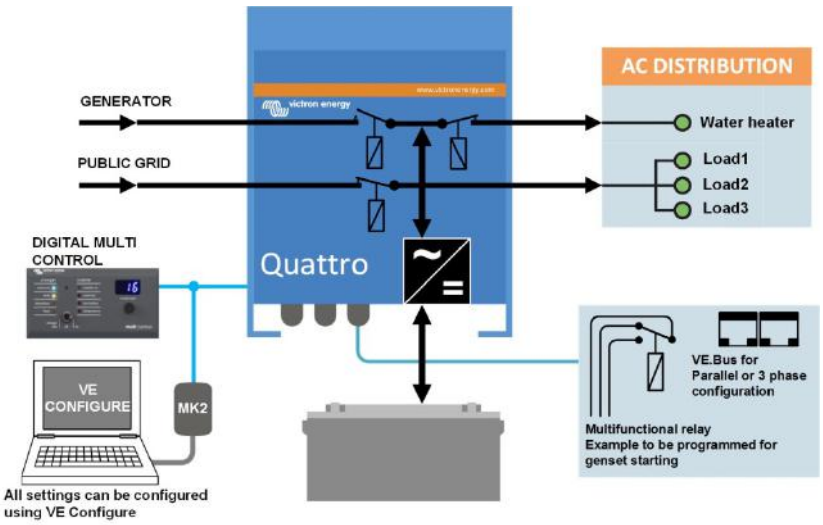
Victron Ethernet Remote, Victron Global Remote and the Color Control Panel.
Data can be stored and displayed on our VRM (Victron Remote Management) website, free of charge.

Remote configuring

When connected to the Ethernet, systems with a Color Control panel can be accessed and settings can be changed.



Color Control panel, showing a PV application



Quattro	12/3000/120-50/50 24/3000/70-50/50	12/5000/220-100/100 24/5000/120-100/100 48/5000/70-100/100	24/8000/200-100/100 48/8000/110-100/100	48/10000/140-100/100
PowerControl / PowerAssist	Yes			
Integrated Transfer switch	Yes			
AC inputs (2x)	Input voltage range: 187-265 VAC Input frequency: 45 – 65 Hz Power factor: 1			
Maximum feed through current (A)	2x 50	2x100	2x100	2x100
INVERTER				
Input voltage range (V DC)	9,5 – 17V 19 – 33V 38 – 66V			
Output (1)	Output voltage: 230 VAC ± 2% Frequency: 50 Hz ± 0,1%			
Cont. output power at 25°C (VA) (3)	3000	5000	8000	10000
Cont. output power at 25°C (W)	2500	4500	7000	9000
Cont. output power at 40°C (W)	2200	4000	6300	8000
Peak power (W)	6000	10000	16000	20000
Maximum efficiency (%)	93 / 94	94 / 94 / 95	94 / 96	96
Zero load power (W)	15 / 15	25 / 25 / 25	30 / 35	35
Zero load power in AES mode (W)	10 / 10	20 / 20 / 20	25 / 30	30
Zero load power in Search mode (W)	4 / 5	5 / 5 / 6	8 / 10	10
CHARGER				
Charge voltage 'absorption' (V DC)	14,4 / 28,8	14,4 / 28,8 / 57,6	28,8 / 57,6	57,6
Charge voltage 'float' (V DC)	13,8 / 27,6	13,8 / 27,6 / 55,2	27,6 / 55,2	55,2
Storage mode (V DC)	13,2 / 26,4	13,2 / 26,4 / 52,8	26,4 / 52,8	52,8
Charge current house battery (A) (4)	120 / 70	220 / 120 / 70	200 / 110	140
Charge current starter battery (A)	4 (12 V and 24 V models only)			
Battery temperature sensor	Yes			
GENERAL				
Auxiliary output (A) (5)	25	50	50	50
Programmable relay (6)	3x	3x	3x	3x
Protection (2)	a-g			
VE.Bus communication port	For parallel and three phase operation, remote monitoring and system integration			
General purpose com. port	2x	2x	2x	2x
Remote on-off	Yes			
Common Characteristics	Operating temp.: -20 to +50°C Humidity (non-condensing): max. 95%			
ENCLOSURE				
Common Characteristics	Material & Colour: aluminium (blue RAL 5012) Protection category: IP 21			
Battery-connection	Four M8 bolts (2 plus and 2 minus connections)			
230 V AC-connection	Screw terminals 13 mm² (6 AWG)	Bolts M6	Bolts M6	Bolts M6
Weight (kg)	19	34 / 30 / 30	45/41	45
Dimensions (hxwxd in mm)	362 x 258 x 218	470 x 350 x 280 444 x 328 x 240 444 x 328 x 240	470 x 350 x 280	470 x 350 x 280
STANDARDS				
Safety	EN-IEC 60335-1, EN-IEC 60335-2-29, IEC 62109-1			
Emission, Immunity	EN 55014-1, EN 55014-2, EN 61000-3-3, EN 61000-6-3, EN 61000-6-2, EN 61000-6-1			
Automotive Directive	2004/104/EC			
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 / 4 A
DC rating: 4 A up to 35 VDC, 1 A up to 60 VDC

Digital Multi Control Panel

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

Blue Power Panel

Connects to a Multi or Quattro and all VE.Net devices, in particular the VE.Net Battery Controller.
Graphical display of currents and voltages.

Computer controlled operation and monitoring

Several interfaces are available:

- **MK2.2 VE.Bus to RS232 converter**
  Connects to the RS232 port of a computer (see 'A guide to VEConfigure')
- **MK2-USB VE.Bus to USB converter**
  Connects to a USB port (see 'A guide to VEConfigure')
- **VE.Net to VE.Bus converter**
  Interface to VE.Net (see VE.Net documentation)
- **VE.Bus to NMEA 2000 converter**
- **Victron Global Remote**
  The Global Remote is a modem which sends alarms, warnings and system status reports to cellular phones via text messages (SMS). It can also log data from Victron Battery Monitors, Multis, Quattros and Inverters to our VRM website through a GPRS connection. Access to this website is free of charge.
- **Victron Ethernet Remote**
  To connect to the Ethernet.
- **Color Control panel (see picture on page 1)**
  Behind the color LCD a Linux microcomputer runs open source software. The Color Control (CCGX) provides intuitive control and monitoring for all products connected to it. The list of Victron products that can be connected is endless: Inverters, Multis, Quattros, all our latest MPPT solar chargers, BMV-700, BMV-600, Lynx Ion + Shunt and more. The information can also be forwarded to our free remote monitoring website: the VRM Online Portal.

BMV Battery Monitor

The BMV Battery Monitor features an advanced microprocessor control system combined with high resolution measuring systems for battery voltage and charge/discharge current. Besides this, the software includes complex calculation algorithms, like Peukert's formula, to exactly determine the state of charge of the battery. The BMV selectively displays battery voltage, current, consumed Ah or time to go. The monitor also stores a host of data regarding performance and use of the battery.
Several models available (see battery monitor documentation).

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Harvest the Sunshine

Mono

380W PERC Half-Cell Module

JAM72S03 360-380/PR Series

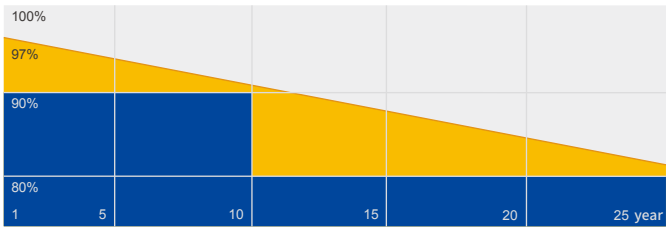
Introduction

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

JA SOLAR

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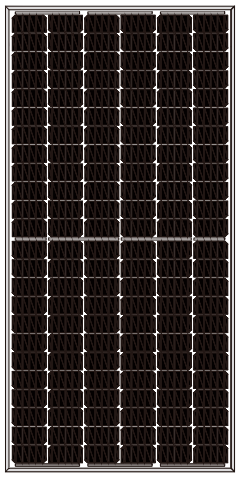
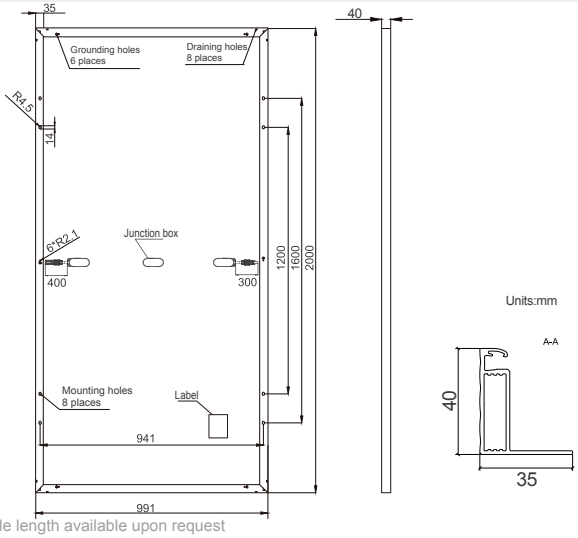
Specificantions subject to technical changes and tests.
JA Solar reserves the right of final interpretation.

JA SOLAR

JAM72S03 360-380/PR Series

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	4mm²
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(Imp) [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_Isc)	+0.051%/°C				
Temperature Coefficient of Voc(β_Voc)	-0.289%/°C				
Temperature Coefficient of Pmax(γ_Pmp)	-0.360%/°C				
STC	Irradiance 1000W/m², 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

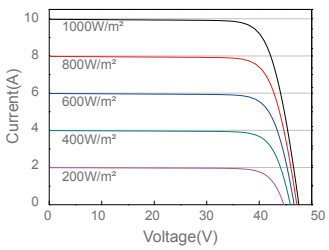
TYPE	JAM72S03 -360/PR	JAM72S03 -365/PR	JAM72S03 -370/PR	JAM72S03 -375/PR	JAM72S03 -380/PR
Rated Max Power(Pmax) [W]	266	270	274	278	281
Open Circuit Voltage(Voc) [V]	43.48	43.80	44.06	44.28	44.51
Max Power Voltage(Vmp) [V]	35.81	36.11	36.37	36.59	36.81
Short Circuit Current(Isc) [A]	7.90	7.94	7.98	8.02	8.08
Max Power Current(Imp) [A]	7.44	7.48	7.53	7.58	7.64
NOCT	Irradiance 800W/m², ambient temperature 20°C, wind speed 1m/s, AM1.5G				

OPERATING CONDITIONS

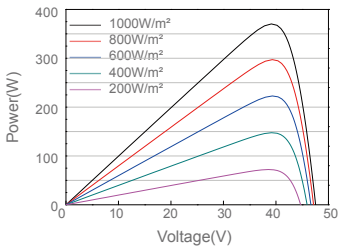
Maximum System Voltage	1000V/1500V DC(IEC)
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	30A
Maximum Static Load,Front	5400Pa
Maximum Static Load,Back	2400Pa
NOCT	45±2°C
Application Class	Class A

CHARACTERISTICS

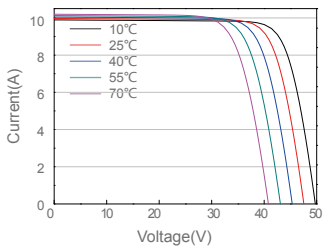
Current-Voltage Curve JAM72S03-370/PR



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/℃	0~50	0~50	0~50
Shelf Temperature/℃	-20~60	-20~60	-20~60
Humidity	5%~95%	5%~95%	5%~95%
Altitude (m)	<2000	<2000	<2000
Design life	15^{+} Years（25℃/77℉）	15^{+} Years（25℃/77℉）	15^{+} Years（25℃/77℉）
Cycle Life	>6000, 25℃	>6000, 25℃	>6000, 25℃
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

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 electronical 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.