



Phoenix Inverters

New Phoenix Inverters

- **Pure sine wave output: suitable to supply sensitive electronic equipment**
- **Ring core transformer: high efficiency**
- **Microprocessor control: excellent protection against accidental misuse**
- **Battery cables included: easy to install (model 12/180 with cigarette plug)**
- **With terminal for remote on/off switch**
- **With IEC-320 receptacle (IEC-230 plug included)**

Specifications

Phoenix inverter	12/180	12/350	24/180	24/350
Input voltage range (V DC)	10,5 - 15,0	10,5 - 15,0	21,0 - 30,0	21,0 - 30,0
DC automatic restart voltage (3)	12,5	12,5	25,0	25,0
Output voltage (1)	230 V ± 5%			
Output frequency (2)	50 Hz ± 0,3%			
Cont. power at 25 °C (VA) (4)	180	350	180	350
Cont. power at 40 °C (W)	150	300	150	300
Peak power (W)	200	400	200	400
Max. efficiency (%)	91	92	92	93
Zero-load power (W)	2,2	2,8	3,8	3,8
Fan assisted cooling	Yes, temperature controlled			
Protection (5)	a - e			
Operating temperature range	-20 to +50°C			
Humidity (non condensing)	max 95%			
ENCLOSURE				
Material & Colour	aluminium (blue Ral 5012)			
Battery-connection	Battery cables of 1.5 meter			
230 V AC-connection	IEC 320 (IEC-320 plug included)			
Protection category	IP 20			
Weight (kg)	2,7	3,5	2,7	3,5
Dimensions (hwxwd in mm)	72x132x200	72x155x237	72x132x200	72x155x237
ACCESSOIRES				
Remote on-off switch	Yes, connector available			
Recommended automatic transfer switch	Filax			
STANDARDS				
Safety	EN 60950			
Emission / Immunity	EN 50081-1, EN55014 / EN 55014-2			

1) 115 V AC on request
 2) 60 Hz on request
 3) Input voltage needed for automatic restart after low voltage shutdown
 4) Non linear load, crest factor 3:1

5) Protection
 a. Output short circuit
 b. Overload
 c. Battery voltage too high
 d. Battery voltage too low
 e. Over temperature



Phoenix Inverter

SinusMax - Superior engineering

Developed for professional duty, the Phoenix range of inverters is suitable for the widest range of applications. The design criteria have been to produce a true sine wave inverter with optimised efficiency but without compromise in performance. Employing hybrid HF technology, the result is a top quality product with compact dimensions, light in weight and capable of supplying power, problem-free, to any load.

Extra start-up power

A unique feature of the SinusMax technology is very high start-up power. Conventional high frequency technology does not offer such extreme performance. Phoenix inverters, however, are well suited to power up difficult loads such as refrigeration compressors, electric motors and similar appliances. The 24/800 model, for example, is capable of starting a typical refrigerator.

Virtually unlimited power thanks to parallel and 3-phase operation capability

Up to 6 units Phoenix 24/3000 can operate in parallel to achieve higher power output. Six 24/3000 units, for example, will provide 15 kW / 18 kVA output power. Operation in 3-phase configuration is also possible.

To transfer the load to another AC source: the automatic transfer switch

If an automatic transfer switch is required on models rated at 1200 VA or more, we recommend to use the Phoenix Multi instead. The switch is included in these products and the charger function of the Multi can be disabled. For our lower power models we recommend the use of our Filax Automatic Transfer Switch. Computers and other electronic equipment will continue to operate without disruption because both the Filax and the Phoenix Multi feature a very short switchover time (less than 20 milliseconds).

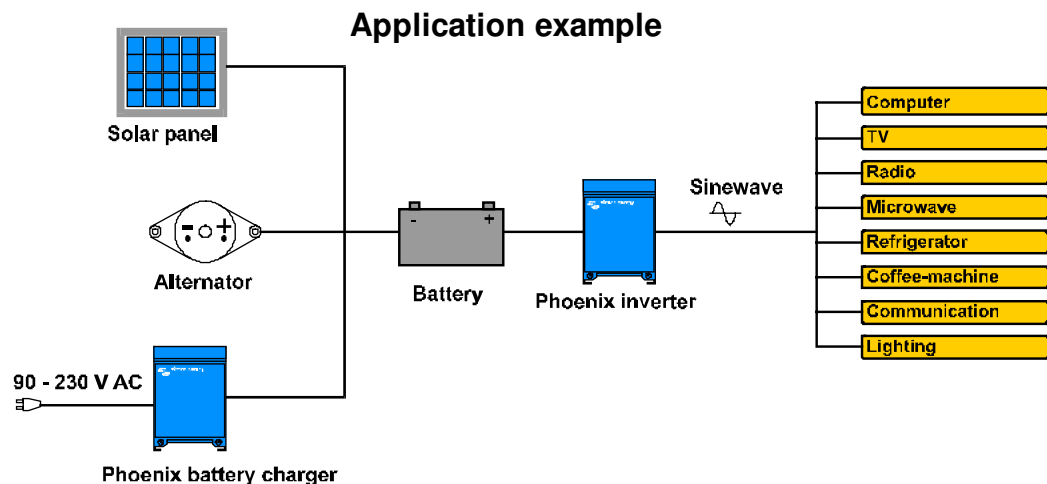
Computer interface

All models rated at 1200 VA or more have a RS-485 computer interface. All you need to connect to your PC is our data link MK1b (see under accessories). This data link takes care of galvanic isolation between the inverter and the computer, and converts from RS-485 to RS-232. Together with the **VEConfigure** software, which can be downloaded free of charge from our website www.victronenergy.com, all parameters of the inverters can be customised. This includes output voltage and frequency, over and under voltage settings and programming the relay. This relay can for example be used to signal several alarm conditions, or to start a generator.

The inverters can also be connected to **VENet**, the new power control network of Victron Energy, or to other computerised monitoring and control systems.

New applications of high power inverters

The possibilities of paralleled high power inverters are truly amazing. For ideas, examples and battery capacity calculations please refer to our book "**Electricity on board**" (available free of charge from Victron Energy and downloadable from www.victronenergy.com).





Specifications

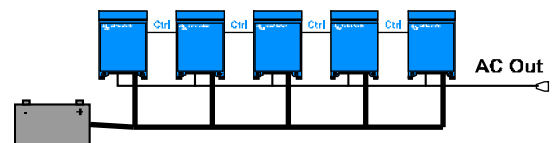
Phoenix Inverter

Phoenix inverter	12 Volt 24 Volt 48 Volt	12/220 24/220 48/220	12/300 24/350	12/600 24/800 48/800	C 12/1200 (5) C 24/1200 (5) C 48/1200 (5)	C 12/1600 (5) C 24/1600 (5) C 48/1600 (5)	12/2500 (5) 24/3000 (5) 48/3000 (5)
Input voltage range (V DC)		10,5 - 15,5 21,0 - 31,0 42,0 - 62,0	10,5 - 15,5 21,0 - 31,0	10,5 - 15,5 21,0 - 31,0 41,0 - 60,0	9,5 - 16,0 19,5 - 32,2 38,0 - 66,0	9,5 - 16,0 19,5 - 33,0 38,0 - 66,0	9,5 - 16,0 19,5 - 33,0 38,0 - 66,0
Cont. output power at 25 °C (VA) (6)		220 220 220	300 350	600 800 800	1200 1200 1200	1600 1600 1600	2500 3000 3000
Cont. power at 25 °C / 40 °C (W)		175 / 150 175 / 150 175 / 150	225 / 215 300 / 275	500 / 450 650 / 600 600 / 540	1000 / 900 1000 / 900 1000 / 900	1300 / 1200 1300 / 1200 1300 / 1200	2000 / 1600 2500 / 2000 2500 / 2000
Peak power (W)		400 400 400	500 600	1000 1200 1250	2200 2200 2200	2300 3000 3000	4500 6000 6000
Max. efficiency 12 / 24 / 48 V (%)		90 / 90 / 92	90 / 91	92 / 94 / 94	93 / 94 / 95	93 / 94 / 95	93 / 94 / 95
Zero-load power 12 / 24 / 48 V (W)		2,5 / 3,0 / 4,0	3,0 / 3,5	4,0 / 4,6 / 8,0	8 / 11 / 13	8 / 11 / 13	15 / 15 / 16
Zero-load power in AES mode		0,5 / 0,8 / 1,2	0,7 / 0,8	0,4 / 0,7 / 0,5	5 / 8 / 10	5 / 8 / 10	10 / 10 / 12
Multi purpose relay driver or relay (7)					relay driver (8)	relay driver (8)	relay
Protection (4)		a,b,d,h	a,b,d,h	a,b,d,h	a,b,c,d,f,g,h	a,b,c,d,f,g,h	a - h
Common Characteristics (2,3)		Output: 230 V ± 2% / 50 Hz ± 0,2% Operating temperature range: -20 to +50°C (fan assisted cooling) Humidity (non condensing) : max 95%					
ENCLOSURE							
Material & Colour		aluminium (blue Ral 5012)					
Battery-connection		1)	1)	1)	1)	1)	M8 studs
230 V AC-connection		IEC-320	IEC-320	IEC-320	G-ST18i	G-ST18i	screw-clamp 2,5mm²
Protection category		IP 20	IP 20	IP 20	IP 21	IP 21	IP 21
Weight (kg)		2,1	3,3	6,5	10	10	18
Dimensions (hxxwxd in mm)		98x130x178	98x130x208	107x187x227	375x214x110	375x214x110	362x258x218
ACCESSORIES							
Remote panel (RS 485 port)					√ (PIV)	√ (PIV)	√ (PIV)
Remote on-off switch					√	√	√
Automatic transfer switch		Filax	Filax	Filax	Phoenix Multi	Phoenix Multi	Phoenix Multi
STANDARDS							
Safety		EN 60950	EN 60950	EN 60950	EN 60335-1	EN 60335-1	EN 60335-1
Emission / Immunity		EN 50081-1, EN55014 / EN 55014-2					
Automotive Directive					95/54/EC	95/54/EC	95/54/EC

- 1) Battery cables of 1.5 meter
- 2) 115 V AC on request
- 3) 60 Hz on request
- 4) Protection
 - a. Output short circuit
 - b. Overload
 - c. Battery voltage too high
 - d. Battery voltage too low
 - e. Battery reverse polarity detection
 - f. 230 V AC on inverter output
 - g. Input voltage ripple too high
 - h. Temperature too high
- 5) Suitable for parallel and 3-phase operation

- 6) Non linear load, crest factor 3:1
- 7) Multipurpose relay which can be set for general alarm, DC undervoltage or genset start signal function
- 8) Relay driver: open collector 66V 40mA

Five parallel units: output power 12,5 kW



Accessories



Battery Alarm

An excessively high or low battery voltage is indicated by an audible and visual alarm, and a relay for remote signalling.



Phoenix Inverter Control (PIV)

This panel is intended for the models equipped with a RS-485 data port. It can also be used on a Phoenix Multi when an automatic transfer switch but no charger function is desired. The brightness of the LED's is automatically reduced during night time.



Computer controlled operation and monitoring (Victron Interface MK1b)

All models rated at 1200 VA or more are ready to communicate with a computer through a RS-485 data port. All you need to link to your PC and be able to set and read out all parameters is the data link as shown and software available on our website. **Moreover, all Victron Energy products equipped with an RS-485 data port can easily be integrated in VE.Net, the new power control network of Victron Energy, or to other computerised monitoring and control systems.**



BMV-501 Battery Monitor

The BMV – 501 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 – 501 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.