



# Phoenix Inverter

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### 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.

### 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. (Please request VE.Bus enabled units for best 3 phase performance)

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

If an automatic transfer switch is required on models rated at 800 VA or more, we recommend to using 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).

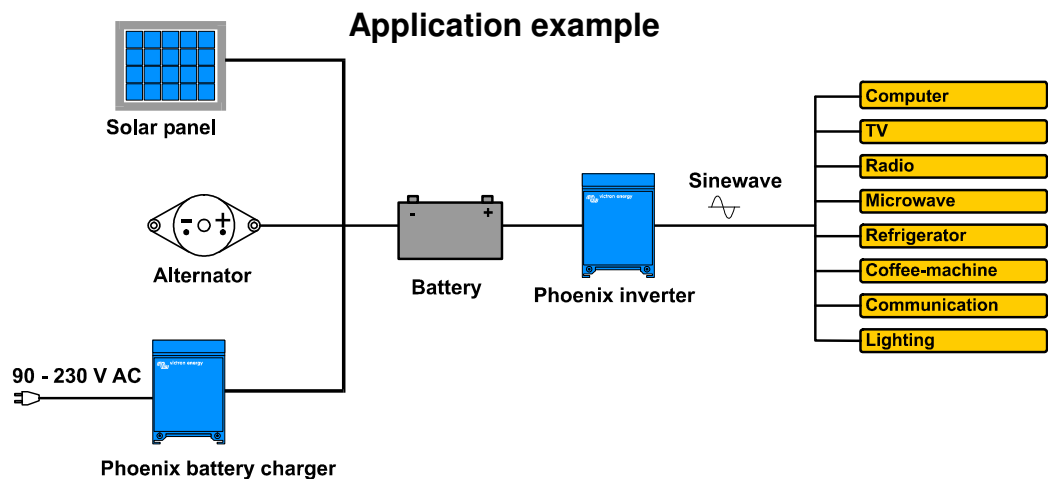
### Computer interface

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 MK2 (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. 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 other computerised monitoring and control systems.

### New applications of high power inverters

The possibilities of paralleled high power inverters are truly amazing.





## Specifications

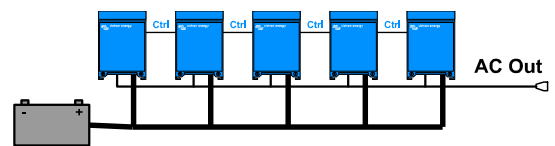
# Phoenix Inverter

Phoenix inverter	12 Volt 24 Volt 48 Volt	12/180 24/180 48/180	12/350 24/350 48/350	12/750 24/750 48/750	C 12/1200 C 24/1200	C 12/1600 C 24/1600	C 12/2000 C 24/2000	12/3000 (4) 24/3000 (4) 48/3000 (4)
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 42,0 - 62,0	10,5 - 15,5 21,0 - 31,0 41,0 - 62,0	9,5 - 16,0 19,5 - 32,2	9,5 - 16,0 19,5 - 33,0	9,5 - 16,0 19,5 - 33,0	9,5 - 16,0 19,5 - 33,0 38,0 - 66,0
Cont. output power at 25 °C (VA) (5)		180 180 180	350 350 350	750 750 750	1200 1200	1600 1600	2000 2000	3000 3000 3000
Cont. power at 25 °C / 40 °C (W)		175 / 150 175 / 150 175 / 150	300 / 250 300 / 250 300 / 250	700 / 650 700 / 650 700 / 650	1000 / 900 1000 / 900	1300 / 1200 1300 / 1200	1600 / 1450 1600 / 1450	2500 / 2000 2500 / 2000 2500 / 2000
Peak power (W)		200 200 200	500 500 500	1400 1400 1400	2200 2200	2300 3000	4000 4000	6000 6000 6000
Max. efficiency 12 / 24 / 48 V (%)		91 / 92 / 92	90 / 91 / 92	91 / 93 / 94	93 / 94	93 / 94	93 / 94	93 / 94 / 95
Zero-load power 12 / 24 / 48 V (W)		2,2 / 3,0 / 4,0	3,0 / 3,5 / 4,0	12 / 12 / 12	8 / 11	8 / 11	10 / 13	15 / 15 / 16
Zero-load power in AES mode		n. a.	n. a.	3 / 4 / 5	5 / 8	5 / 8	8 / 10	10 / 10 / 12
Multi purpose relay driver or relay					relay driver (7)	relay driver (7)	relay driver (7)	relay
Protection (3)		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,b,c,d,f,g,h	a - h
Common Characteristics (2,3)		Output: 230 V ± 2% / 50/60 Hz ± 0,2% (switch selectable) Operating temperature range: -20 to +50 °C (fan assisted cooling) Humidity (non condensing) : max 95%						
<b>ENCLOSURE</b>								
Material & Colour	aluminium (blue Ral 5012)							
Battery-connection	1)	1)	Screw conn.	1)	1)	M8 studs	M8 studs	
230 V AC-connection	IEC-320 (IEC-320 plug included) or Schuko			G-ST18i	G-ST18i	Spring-clamp	Screw-clamp	
Protection category	IP 20	IP 20	IP 20	IP 21	IP 21	IP 21	IP 21	
Weight (kg)	2,7	3,5	2,7	10	10	12	18	
Dimensions (h x w x d in mm)	72x132x200	72x155x237	72x180x295	375x214x110	375x214x110	520x255x125	362x258x218	
<b>ACCESSORIES</b>								
Remote panel (RS 485 port)				√ (PIV)	√ (PIV)	√ (PIV)	√ (PIV)	
Remote on-off switch	√	√	√	√	√	√	√	
Automatic transfer switch	Filax	Filax	Filax	Phoenix Multi	Phoenix Multi	Phoenix Multi	Phoenix Multi	
<b>STANDARDS</b>								
Safety	EN 60950	EN 60950	EN 60950	EN 60335-1	EN 60335-1	EN 60335-1	EN 60335-1	
Emission / Immunity	EN55014-1 / EN 55014-2							
Automotive Directive	95/54/EC and 2004/104/EC							

- 1) Battery cables of 1.5 meter (12/180 with cigarette plug)
- 2) 115 V AC on request
- 3) 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
- 4) Suitable for parallel and 3-phase operation

- 5) Non linear load, crest factor 3:1
- 6) Multipurpose relay which can be set for general alarm, DC undervoltage or genset start signal function
- 7) 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 (Interface MK2)

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. (see also 'A guide to VEConfigure')

**Moreover, all Energy products equipped with an RS-485 data port can easily be integrated in our new power control network, or in 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.