



# victron energy

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## THE PERFECT MATCH !



# HONDA

POWER EQUIPMENT





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BLUE POWER

## ELECTRICITY: ALWAYS & EVERYWHERE With VICTRON Phoenix MultiPlus and a HONDA Generator

### An intelligent combination with endless possibilities!

Electrical appliances that increase on board comfort, such as air-conditioning, microwave or dishwasher demand a large amount of electricity. The obvious first thought is that a generator would be the ideal source of power. It will, however, have to have sufficient capacity to handle the maximum demand caused by inrush or having more than one appliance on at the same time. This normally means a large generator with its' maintenance requirement, fuel consumption, noise and size.

### Thanks to new technology there is now a more elegant solution!

The Phoenix Multi Plus from Victron Energy can work in parallel with the generator and thus boost the total power available. **The generator cannot handle the temporary peak demand of power? The MultiPlus provides the extra energy needed from the battery and assists the generator. Surplus power? The MultiPlus uses it to recharge the battery!**

And when your power consumption is very low then the MultiPlus can do the job and you can switch off the generator. Later, when it's convenient, switch the generator on and the charge function will bring the batteries back up to top condition.

### Want to do more with a small portable generator?

**Now there is a compact, lower priced MultiPlus ideal for use with small portable generators such as the Honda EU series.**

### The Perfect combination: Phoenix MultiPlus and Honda EU Generator.

The Phoenix MultiPlus is a sophisticated power centre comprising a pure sinewave inverter, a multi-stage battery charger and a mains changeover switch all in one compact housing. Besides that, the MultiPlus has some revolutionary features that include **PowerControl** and **PowerAssist** as well as the ability to operate more than one MultiPlus together in parallel with each other. And now we have added the ability to work together with a Honda EU generator.

The example below shows just how simple connection of the system is. The multi will automatically start to assist the generator as soon as the load is too much for the generator so that high loads are no longer a problem on board.



To the left, the example shows how the generator and the Multi are coupled together so that heavy loads no longer present a problem. When a load greater than that which the generator could handle is connected, the **PowerAssist** function is immediately activated. The unit stops operating as a charger and the inverter function is activated so that for as long as is necessary (and depending upon available battery power) a considerable increase in power is available. When the peak power decreases below the capacity of the generator, the MultiPlus uses what is spare to recharge the batteries. This intelligent use of technology gives you flexibility, greater levels of comfort and a more cost effective solution to your power requirements.

Stroom voor elke toepassing





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#### **Honda generators of the newest generation.**

The Honda generators of the newest generation are extremely light, quiet, compact and reliable. Because they are so easy to use they have created a new standard in the area of mobile power supply. Due to clever regulation, the variable engine speed will always be adjusted to suit the power requirement.

The disadvantage of this is that the power is not always available when there is a sudden demand for high power. When no load or a very small load is required the generator runs at low speed and so can only deliver a small amount of power.

Result: the voltage drops too much when a sudden high load is connected, and the generator stops.

#### **The generator has no or very low load and runs at slow speed.**

When you connect a grinder or microwave oven, for example, normally the power would fall off. The MultiPlus, however, will take care of the initial high power demand and gives the generator time to come up to the right speed.

#### **You want to use more power than the generator can deliver.**

The generator is running at maximum speed and power but you want more.

The MultiPlus will deliver the extra power needed with inverter power from the battery.

Due to the unique PowerAssist function you can temporarily use more power.

As soon as the power demand reduces and the generator has spare power available the PowerAssist function is switched off and the multi will start charging again.

### **Virtually limitless power thanks to parallel running**

#### **EXAMPLE 1: The Honda EX7 with Phoenix MultiPlus 12/1200/50**

The Honda EX 7 delivers a maximum of 700VA.

The Phoenix MultiPlus 12/1200/50 delivers 1200VA.

The total power available is 1900VA; and that really means something: you could, for example, now use heavy electrical tools or a microwave oven.

You only want to watch television?(power consumption about 50VA)

Just switch off the generator and let the MultiPlus and the battery do the work.

Later you just start the generator to charge the battery with the charger part of the MultiPlus to bring it in top condition again.

#### **EXAMPLE 2: The Honda EU10i with Phoenix MultiPlus 12/1600/70.**

The Honda EU 10i delivers a maximum of 1000VA.

The MultiPlus 12/1600/70 delivers 1600VA.

So the total available power is 2600VA.

Now you have the possibility to simultaneously use heavy power tools, microwave, air-conditioning and other heavy loads.

As soon as the power demand reduces and the generator has enough power available the inverter function is changed for the charger function, and the battery is recharged with a maximum of 70 amps.

#### **EXAMPLE 3: The Honda EU20i with Phoenix MultiPlus 12/2500/120.**

Now you have 2000 + 2500 = 4500VA available, and up to 120 amp. of charging capacity.

More than enough for a medium size air conditioning compressor or a washing machine!

And so there are many more combinations to think of because you can raise the power demand by choosing a bigger generator and connect more than one Multi in parallel.

Ask for the brochure "Achieving the impossible", or the book "Electricity on Board".

#### **Automatic, uninterruptible change-over capability (UPS functionality)**

When the generator is switched off the Multi will switch to stand alone (inverter mode) and take over the power to the connected equipment.

The change-over is so fast that computers and other electronic equipment will continue to work uninterrupted. Clock's and other digital equipment don't need to be reset.





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## Specifications: Phoenix MultiPlus

# Phoenix Multi / MultiPlus

Phoenix Multi/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	12/2000/100 (3) 24/2000/60 (3)	12/2500/120 (3) 24/3000/70 (3) 48/3000/35 (3)
PowerControl		Yes	Yes	Yes	Yes	Yes
PowerAssist (MultiPlus version)		No	Yes, MultiPlus	Yes, MultiPlus	Yes, MultiPlus	Yes, MultiPlus
Transfer switch (A)		16	16	16	16 or 30	16 or 30
<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) (5)		800	1200	1600	2000	2500 / 3000 / 3000
Cont. output power at 25 °C (W)		700	1000	1300	1800	2000 / 2500 / 2500
Cont. output power at 40 °C (W)		650	900	1200	1500	1600 / 2000 / 2000
Peak power (W)		1600	2400	3000	4000	4500 / 6000 / 6000
Maximum efficiency (%)		92 / 94	93 / 94	93 / 94	93 / 94	93 / 94 / 95
Zero-load power (W)		5 / 8	5 / 8	5 / 8	10 / 10	10 / 10 / 12
<b>CHARGER</b>						
AC Input		Input voltage range: 187-265 VAC		Input frequency: 45 – 55 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	100 / 60	120 / 70 / 40
Charge current starter battery (A)		4				
Battery temperature sensor		yes				
<b>GENERAL</b>						
Multi purpose relay driver or relay (6)		relay driver (7)	relay driver (7)	relay driver (7)	relay	relay
Protection (2)		a,b,c,d,f,g,h				a - h
Common Characteristics		Operating temp. range: -20 to +50°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 studs	
230 V AC-connection		G-ST18i connector			screw-clamp 2,5 mm	
Weight (kg)		10	10	10	18	18
Dimensions (hwxwd in mm)		375x214x110			362x258x218	
<b>STANDARDS</b>						
Safety		EN 60335-1, EN 60335-2-29				
Emission / Immunity		EN55014-1, EN 61000-3-2 / EN 55014-2, EN 61000-3-3				
Automotive Directive		95/54/EC and 2004/104/EC				

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

2) 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

3) Suitable for parallel and 3-phase operation

4) At 25 °C ambient

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) Open collector output 66V 40mA

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# HONDA

## POWER EQUIPMENT

### Specifications: Generators

	EU 10i	EU 20i
Max. output (230 V)	1,0 kVA	2,0 kVA
Continu output (230 V)	0,9 kVA	1,6 kVA
Output technology	Inverter	Inverter
Output current (maximum)	3,9 A	9,7 A
Protection rating	IP 23	
DC output	12 V / 8,3 A charge current	12 V / 8 A charge current
230 V outlets	1x standard sockets	2x standard sockets
3-fase outlets	-	
Features	Economy mode / parallel operation	
4-stroke engine typw	OHV GXH 50	OHV GXH 100
Max. Engine output	1,84 kW	2,6 kW
Tank capacity	2,3 L	4,1 L
Max runtime of full tank	6,6 to 8,3 hours (Economy)	4,0 to 10,5 hours (Economy)
Noise level LWA	83 -87 dB (A)	81 - 90 dB (A)
Noise level at 7 m	52 – 57 dB (A)	53 - 59 dB (A)
Dimensions (l x b x h)	450 x 240 x 380 mm	510 x 290 x 425 mm
Weight	13,0 kg	21,0 kg
Alarms	Oil & overload	
Accessoires (optional)*	Charge cable, parallel cable	

