

# MultiPlus inverter / charger

800VA - 5kVA

Lithium Ion battery compatible

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



**MultiPlus  
24/3000/70**

### Multi-functional, with intelligent power management

The MultiPlus is a powerful true sine wave inverter, a sophisticated battery charger that features adaptive charge technology, and a high-speed AC transfer switch in a single compact enclosure. Next to these primary functions, the MultiPlus has several advanced features, as outlined below.

### 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 one of the inputs 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 3kVA and more).

### Virtually unlimited power thanks to parallel operation

Up to 6 Multi's 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 10A per 5kVA Multi at 230VAC). 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.

### Four stage adaptive charger and dual bank battery charging

The main output provides a powerful charge to the battery system by means of advanced 'adaptive charge' software. The software fine-tunes the three stage automatic process to suit the condition of the battery, and adds a fourth stage for long periods of float charging. The adaptive charge process is described in more detail on the Phoenix Charger datasheet and on our website, under Technical Information. In addition to this, the MultiPlus will charge a second battery using an independent trickle charge output intended for a main engine or generator starter battery (trickle charge output available on 12V and 24V models only).

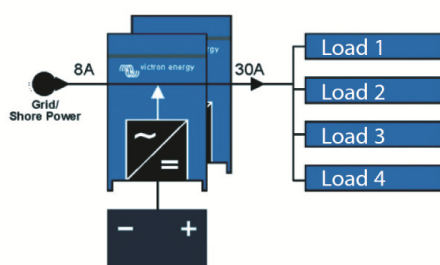
### System configuring has never been easier

After installation, the MultiPlus is ready to go. If settings have to be changed, this can be done in a matter of minutes with a new DIP switch setting procedure. Even parallel and 3-phase operation can be programmed with DIP switches: no computer needed! Alternatively, VE.Net can be used instead of the DIP switches. And sophisticated software (VE.Bus Quick Configure and VE.Bus System Configurator) is available to configure several new, advanced, features.

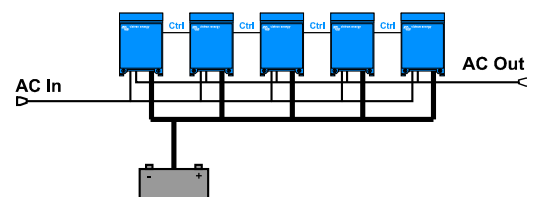


**MultiPlus Compact  
12/2000/80**

**PowerAssist with 2x MultiPlus in parallel**



**Five parallel units: output power 25 kVA**



| MultiPlus                             | 12 Volt<br>24 Volt<br>48 Volt | C 12/800/35<br>C 24/ 800/16 | C 12/1200/50<br>C 24/1200/25 | C 12/1600/70<br>C 24/1600/40 | C 12/2000/80<br>C 24/2000/50 | 12/3000/120<br>24/3000/70<br>48/3000/35 | 24/5000/120<br>48/5000/70 |
|---------------------------------------|-------------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|---|---------------------------|
| <b>PowerControl</b>                   |                               | <b>Yes</b>                  | <b>Yes</b>                   | <b>Yes</b>                   | <b>Yes</b>                   | <b>Yes</b>                              | <b>Yes</b>                |
| <b>PowerAssist</b>                    |                               | <b>Yes</b>                  | <b>Yes</b>                   | <b>Yes</b>                   | <b>Yes</b>                   | <b>Yes</b>                              | <b>Yes</b>                |
| <b>Transfer switch (A)</b>            |                               | <b>16</b>                   | <b>16</b>                    | <b>16</b>                    | <b>30</b>                    | <b>16 or 50</b>                         | <b>100</b>                |
| <b>Parallel and 3-phase operation</b> |                               | <b>Yes</b>                  | <b>Yes</b>                   | <b>Yes</b>                   | <b>Yes</b>                   | <b>Yes</b>                              | <b>Yes</b>                |

#### INVERTER

| 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    | 2500                        | 4500    |
| Cont. output power at 40 °C (W)      | 650                          | 900     | 1200      | 1450    | 2200                        | 4000    |
| 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  | 15 / 15 / 16                | 25 / 25 |
| Zero load power in AES mode (W)      | 5 / 8                        | 5 / 8   | 5 / 8     | 7 / 9   | 10 / 10 / 12                | 20 / 20 |
| Zero load power in Search mode (W)   | 2 / 3                        | 2 / 3   | 2 / 3     | 3 / 4   | 4 / 5 / 5                   | 5 / 6   |

#### CHARGER

| 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 (VDC)                   | 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 (12V and 24V models only)      |         |                             |         |                 |          |
| Battery temperature sensor           | yes                              |         |                             |         |                 |          |

#### GENERAL

|                               |   |       |       |       |           |           |
|-------------------------------|---|-------|-------|-------|-----------|-----------|
| Auxiliary output (5)          | n. a.   | n. a. | n. a. | n. a. | Yes (16A) | Yes (25A) |
| 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 (7) | n. a.   | n. a. | n. a. | n. a. | Yes (8)   | Yes       |
| Remote on-off                 | Yes   |       |       |       |           |           |
| Common Characteristics        | Operating temp. range: -40 to +50°C (fan assisted cooling) Humidity (non condensing): max 95% |       |       |       |           |           |

#### ENCLOSURE

|                          |  |    |              |  |             |    |
|--------------------------|--|----|--------------|--|-------------|----|
| 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)     |             |    |
| Weight (kg)              | 10   | 10 | 10           | 12   | 18          | 30 |
| Dimensions (hwxwd in mm) | 375x214x110                                  |    | 520x255x125  | 362x258x218                                    | 444x328x240 |    |

#### STANDARDS

|                      |                                     |  |  |  |  |  |
|----------------------|-------------------------------------|--|--|--|--|--|
| Safety               | EN 60335-1, EN 60335-2-29           |  |  |  |  |  |
| Emission, Immunity   | EN55014-1, EN 55014-2, EN 61000-3-3 |  |  |  |  |  |
| Automotive Directive | 2004/104/EC                         |  |  |  |  |  |

- 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 undervoltage or genset start/stop function  
 AC rating: 230V/4A  
 DC rating: 4A up to 35VDC, 1A up to 60VDC  
 7) A. o. to communicate with a Lithium Ion battery BMS  
 8) Models with 16A transfer switch only (see Quattro for 50A transfer switch)



#### Digital Multi Control

A convenient and low cost solution for remote monitoring, with a rotary knob to set Power Control and Power Assist levels.



#### Blue Power Panel

Connects to a Multi or Quattro and all VE.Net devices, in particular the VE.Net Battery Controller.  
 Graphic 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, Multi's, Quattro's and Inverters to a website through a GPRS connection. Access to this website is free of charge.
- **Victron Ethernet Remote**  
To connect to Ethernet.

#### 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).