

P18000 CombHy



HYBRID POWER

Combination of diesel generator and battery pack featuring:

- ✓ *NO genset running with low loads*
- ✓ *Reduced fuel consumption*
- ✓ *Less noise emissions*
- ✓ *Lower exhaust emissions*
- ✓ *Smart control and monitoring*
- ✓ *Optimized design for easy service and maintenance tasks*



Main features

Frequency:	50 Hz
Voltage:	230 V Single Phase
Power Factor:	0,9

Genset Power Rating

Stand-by:	13,6 kVA / 12,2 kWe
Continuous:	12,8 kVA / 11,6 kWe

Ratings definition (According to standard ISO8528 1:2005)

Hybrid System

Inverter	
Nominal Power / Charge current	3000VA / 70A
Voltage In / Out	24VDC / 230VAC
Batteries:	
Type	AGM
Nominal Capacity / DOD	278Ah / 70%

Ratings definition @ 25°C ambient temperature

P18000 CombHy



Genset enclosure

It includes the genset on fully banded baseframe, exhaust silencer, vertical fuel tank, starting battery and control panel

Hybrid System

It includes AC/DC inverter with BMS and AGM battery pack.

Genset features

Engine

Brand & Model	Yanmar 3TNV76
Speed:	3000 RPM
Emissions level	EU Stage 3A
Governor:	Mechanical

Alternator

Brand & Model	NSM M112 MB
Type / Poles	Brushless / 2 Poles
Insulation Class / IP	Class H / IP23

Fuel System

Fuel tank capacity:	51 liters
Fuel consumption @ 75% / 100% COP:	6,0 / 4,6 liters per hour
Autonomy @ 75% / 100% COP:	8,5 / 11 hours

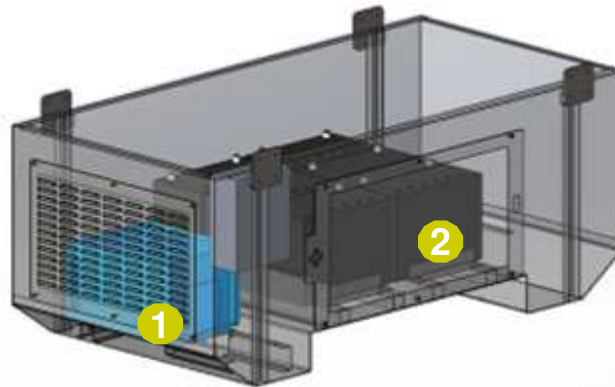
Noise emissions

Noise level - LWA	96 dB(A)
Noise pressure @ 7m - LpA	67 dB(A)



P18000 CombHy

Hybrid System



(1) Inverter/Battery charger

A powerful true sine wave inverter with a sophisticated battery charger that features adaptive charge technology, and a high-speed AC transfer switch in a single compact enclosure. The inverter allows supply power (from batteries) to the connected loads (through hybrid power sockets).

Once batteries reach max depth of discharge the inverter automatically start up the generator or if connected, takes over the power supply from the grid.

At the end of the battery charging cycle automatically the load will be powered again from batteries. All the transitions happen very fast (5 milliseconds) that computers and other electronic equipment will continue to operate without disruption.

The integrated battery charger is very powerful and it draws a lot of current from the generator or the grid to the batteries. shore current can be set.

The system takes account of AC loads and use whatever is extra for charging, thus preventing the generator is overloaded.

(2) Batteries

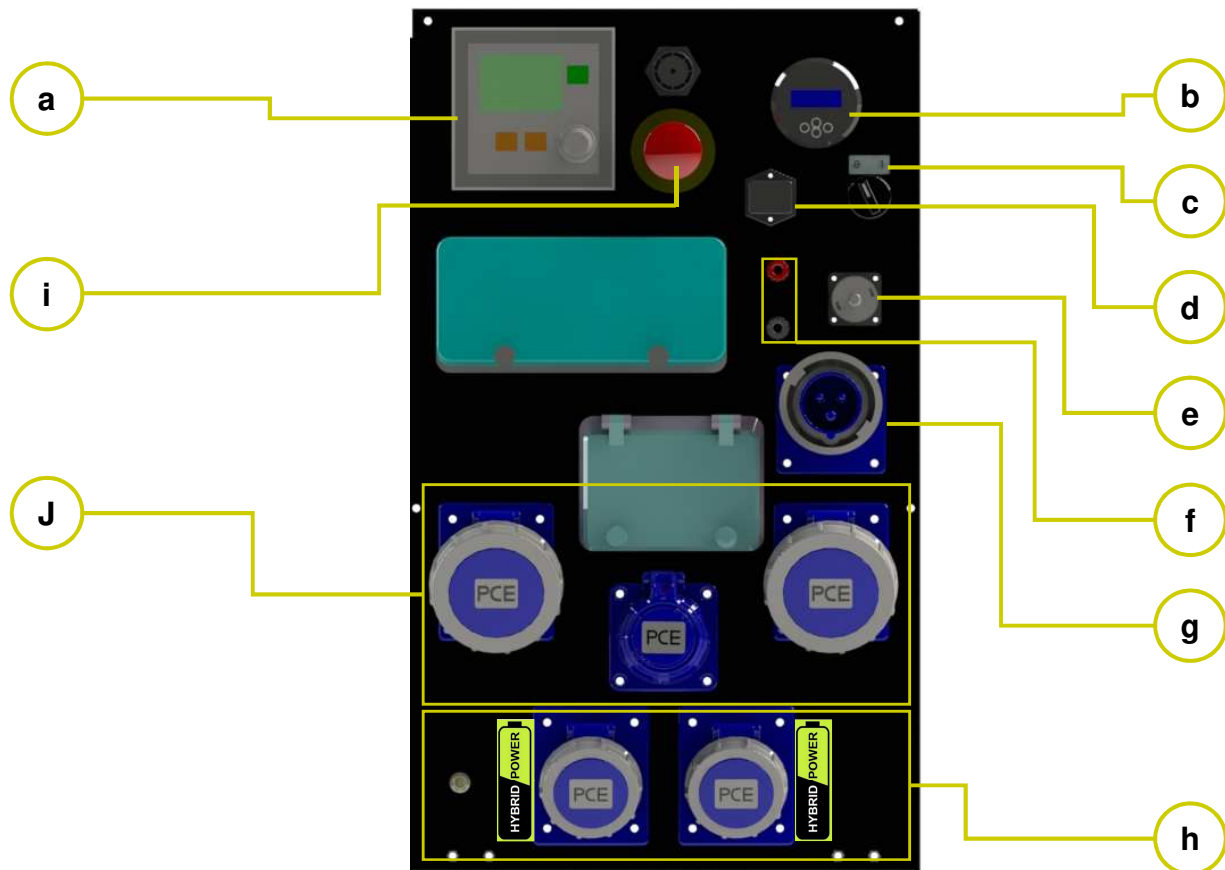
The battery pack is composed by n°6 (2x3pcs) AGM batteries 12V with nominal capacity 92,8Ah C₁₀. The total capacity therefore is 278Ah with nominal voltage of 24V.

Being maintenance free, low self discharge and capable to deliver high currents on demand make these batteries one of the best choice for mobile hybrid power applications.

Overall dimensions

Length:	1500 mm
Width:	760 mm
Height:	1515 mm
Dry Weight:	800 kg

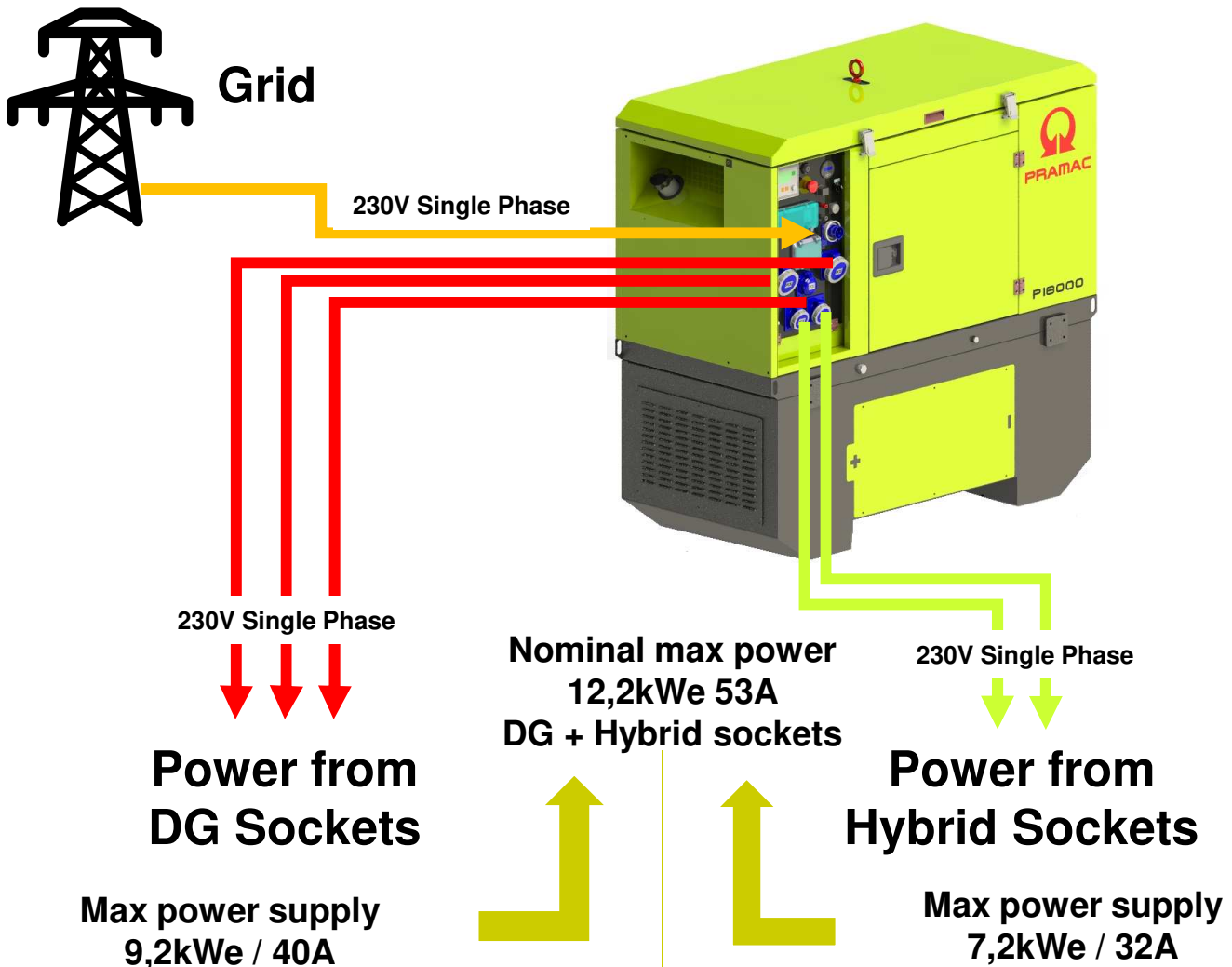
P18000 Hybrid Control Panel



- a) Digital genset control unit complete with three position key selector switch (Off – On – Remote)
 - Genset parameters: V- Hz – RPM – A (1Phase) – kVA – kWe – Fuel level (%)
 - Genset protections: Over load –current –voltage, High Coolant temperature, Low Oil pressure – Low fuel level.
 - Parameters control and/or firmware transferring through NFC smart connect
- b) BMS display
 - Battery charge status (Ah)
 - Time to start genset – DOD level (min)
 - Charging/Discharging current
- c) BMS On/Off switch
- d) RJ45 connector for BMS setting
- e) Multi-pin for RSS / AMF panel connection
- f) 2-wire start/stop
- g) Plug for Grid utility
- h) Hybrid Power outlet sockets (2x16A 2P + T) – Power from batteries
- i) Emergency push-button
- j) Genset outlet sockets (2x32A 2P+T / 1x16A Schuko)

P18000 CombHy

How it works



The max load connected to the P18000 CombHy can be up to
14,5kWe/63A during 1 hour
 WITH BATTERIES FULLY CHARGED

DG Sockets:
 1 x 32A 2P + T 230V IP67
 1 x 32A 2P + T 230V IP67
 1 x 16A Schuko 230V IP67

Hybrid Sockets:
 2 x 16A 2P + T 230V IP67
 With power demand > 2,3kWe/10A
 the hybrid system automatically transfer the load
 from batteries to DG set

Up to 6kWe → NO power outages Above 6kWe → 15s delay load to genset

If P18000 CombHy is connected to the **Grid** the hybrid system will use it as **primary alternative for power supply** when no possible from batteries, preventing genset running with grid presence

P18000 CombHy

Power supply autonomy from batteries

Load (W)	Voltage (V)	Amps (A)	Capacity (Ah)	Battery pack autonomy (h)
100	230	0,4	194,0	18,6
200	230	0,9	194,0	9,3
300	230	1,3	194,0	6,2
400	230	1,7	194,0	4,6
500	230	2,2	194,0	3,7
600	230	2,6	194,0	3,1
700	230	3,0	194,0	2,7
800	230	3,5	194,0	2,3
900	230	3,9	194,0	2,1
1000	230	4,3	194,0	1,9
1100	230	4,8	194,0	1,7
1200	230	5,2	194,0	1,5
1300	230	5,7	194,0	1,4
1400	230	6,1	194,0	1,3
1500	230	6,5	194,0	1,2
1600	230	7,0	194,0	1,2
1700	230	7,4	194,0	1,1
1800	230	7,8	194,0	1,0
1900	230	8,3	194,0	1,0
2000	230	8,7	194,0	0,9
2100	230	9,1	194,0	0,9
2200	230	9,6	194,0	0,8
2300	230	10,0	194,0	0,8

Battery pack autonomy at optimal ambient conditions

P18000 CombHy

Main Applications



Construction sites

P18000 CombHy prevents run generators with low loads and also have an “ECO” power generation during night for lights or service loads. Particularly indicated for residential areas where low noise and reduced exhaust emissions is a requirement. With typical load profiles for construction sites it is possible have a fuel consumption reduction from 8 to 12 litres/day (-25/30%).

Home stand-by



P18000 CombHy allows have an eco-friendly and efficient stand-by system thanks the integrated automatic mains failure function. In case of Grid power outage the machine take the load using the energy stored in the batteries without any black-out Hybrid Power line can be used to feed privileged loads and lives the DG set will give full reliability to the system once batteries must be charged / load increase and Grid is not still present.

