

Model: P450D5

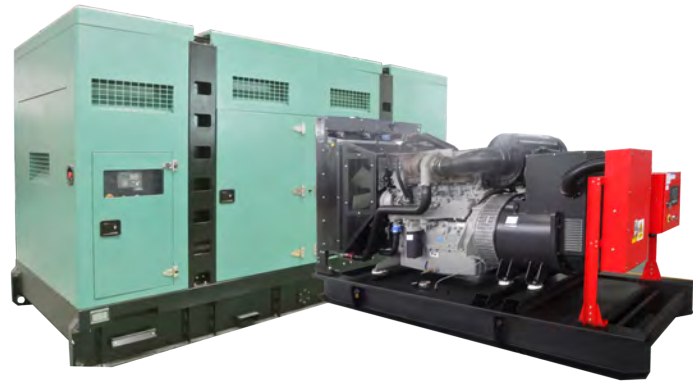
Powered by PERKINS

Output Rating

MODEL		Power rating		Voltage available		
		PRIME(1)	STANDBY(2)			
P450D5	400V/50HZ	320KW	360KW	380/220V	400/230V	415/240V
	PF:0.8	400KVA	450KVA			

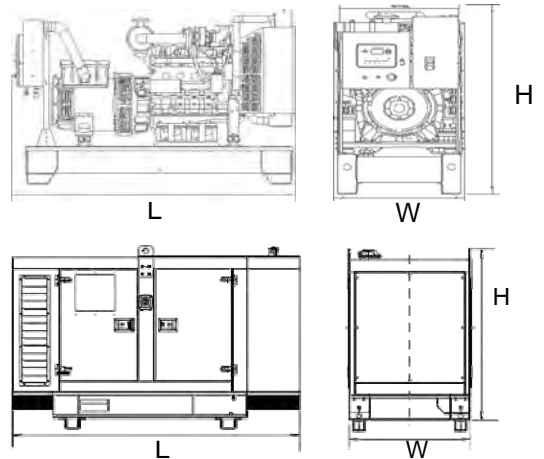
General Information

Model	P450D5		
Engine	2206A-E13TAG3		
Speed control type	Electronic		
Phase	3		
Control System	Digital		
System voltage	24V		
Frequency	50HZ		
Engine Speed(RPM)	1500		
Fuel Consumption (L/H)	Standby power(2)	90	
	Prime Power(1)	89	
	75% prime power	62	
	50% prime power	42	



Dimension and Weight

Dimension	Open	Silent
Length (L)	3500mm	4350mm
Width (W)	1150mm	1400mm
Height (H)	2000mm	2260mm
Net Weight	3480KG	5310KG



AGG POWER gensets are compliant with EC mark which include the following directives:

- * 2006/42/EC Machinery safety.
- * 2006/95/EC Low voltage
- * EN 60204-1: 2006+A1:2009, EN ISO 12100:2010, EN ISO 13849-1: 2008, EN 12601: 2010

(1) Prime Power (PRP):

According to ISO 8528-1:2005, Prime power is the maximum power which a generating set is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year under the agreed operation conditions with the maintenance intervals and procedures being carried out as prescribed by the manufacturer. The permissible average power output (Ppp) over 24h of operation shall not exceed 70% of the PRP.

(2) Standby Power (ESP):

According to ISO 8528-1:2005, standby power is the maximum power available during a variable electrical power sequence, under the stated operation conditions, for which a generating set is capable of delivering in the event of a utility power outage or under test conditions for up to 200h of operation per year with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. The permissible average power output over 24h of operation shall not exceed 70% of the ESP.



Engine Specification

Basic technical data

Number of cylinders... 6
 Cylinder arrangement... vertical in-line
 Cycle... 4 stroke
 Induction system... turbocharged, air-to-air charge cooling
 Combustion system... direct injection diesel
 Compression ratio... 16,3:1
 Bore... 130 mm
 Stroke... 157 mm
 Cubic capacity... 12,5 litres
 Direction of rotation... anticlockwise when viewed from flywheel
 Firing order (number 1 cylinder furthest from flywheel) 1-5-3-6-2-4
 Estimated total weight of Electropak (dry) ... 1478 kg
 Estimated total weight of Electropak (wet) ... 1582 kg

Lubrication system

Maximum total system oil capacity ... 40 litres
 Minimum oil capacity in sump ... 32,5 litres
 Maximum oil capacity in sump ... 38 litres
 Maximum engine operating angles -
 front up, front down, right side, left side ... 7 °

Exhaust system

Maximum back pressure

-1800 rev/min ... 10,0 kPa
 Exhaust outlet, internal diameter... 123 mm

Electrical system

-type ... 24 Volt negative earth
 Alternator type ... 22SI
 -alternator voltage ... 24V

Cooling system

Radiator

Face area ... 1,238 m²
 Number of rows and materials ... 1 rows, aluminium
 Matrix density and material ... 12 fins per inch, aluminium
 Width of matrix ... 1048 mm
 Height of matrix ... 1100 mm
 Weight of radiator (dry) ... 132 kg
 Pressure cap setting (min) ... 70 kPa

Charge cooler

Face area... 1,006 m²
 Number of rows and materials ... 1 rows, aluminium
 Matrix density and material ... 12 fins per inch, aluminium
 Width of matrix ... 915 mm
 Height of matrix ... 1100 mm

Coolant pump

Speed @ 1500 rev/min ... 2056 rev/min
 Speed @ 1800 rev/min ... 2468 rev/min
 Drive method... Gear

Coolant

Total system capacity ... 51,4 litres
 Max. top tank temperature ... 104 °C
 Temperature rise across engine ... 10 °C
 Max. pressure in engine cooling circuit ... 70 kPa
 Max. permissible external system resistance ... 30 kPa
 Max. static pressure head on pump ... 30 kPa
 Coolant flow (min) against 30 kPa restriction
 @ 1500 rev/min ... 5,3 litres/sec
 @ 1800 rev/min ... 6,7 litres/sec

General installation

Designation	Units	Prime		Standby	
		50Hz @ 1500 rev/min		60Hz @ 1800 rev/min	
Gross engine power	kWb	368,4	412,5	373,4	406,5
Brake mean effective pressure	kPa	2344	2637	1984	2171
Combustion air flow (at rated speed)	m ³ /min	24,3	26,4	27,4	29,0
Exhaust gas flow (Max.)	m ³ /min	64,6	72,5	67,5	73,5
Exhaust gas mass flow	kg/min	28,1	30,9	32,6	34,5
Exhaust gas temperature (turbocharger outlet)	°C	630	630	660	660
Boost pressure ratio		3,2	3,5	3,1	3,4
Overall thermal efficiency (nett)	%	41,4	40,9	40,7	40,3
Typical genset electrical output (0.8pf 25 °C)	kWe	320	360	320	350
	kVA	400	450	400	438
Assumed alternator efficiency	%	92		92	
Energy balance					
Energy in fuel	kWt	842,6	958,2	857,0	945,7
Energy in power output (gross)	kWb	368,4	412,5	373,4	406,5
Energy to additional losses	kWb	5,5	6,2	5,6	6,1
Energy to cooling fan	kWm	14		19	
Energy in power output (nett)	kWt	348,9	392,3	348,8	381,4
Energy to exhaust	kWt	252,6	290,4	244,7	273,7
Energy to coolant and lubricating oil	kWt	127,3	139,9	130,2	139,5
Energy to charge cooler	kWt	60,3	75,5	68,4	76,5
Energy to radiation	kWt	34,0	39,8	40,3	49,6



▪ Alternator

Alternator		
Poles	Num	4
Winding Connections (standard)		Star-serie
Insulation	Class	H class
Enclosure (according IEC-34-5)		IP23
Exciter System		Brushless
Voltage Regulator		A.V.R. (Electronic)
Bearing		Single bearing
Coupling		Flexible disc
Coating type		Standard (Vacuum impregnation)

▪ Options

Engine	Alternator	Generator Sets	Fuel System	Canopy
<ul style="list-style-type: none"> •Water Jacket Preheater •Oil Preheater 	<ul style="list-style-type: none"> •Winding Temperature measuring Instrument •Alternator Preheater •PMG •Anti-damp and anti-corrosion treatment •Anti-condensation heater 	<ul style="list-style-type: none"> •Tools with the machine 	<ul style="list-style-type: none"> • Low fuel level alarm •Automatic fuel feeding system •Fuel T-valves 	<ul style="list-style-type: none"> •Rental Type Canopy •Trailer
Lubricating System	Exhaust System	Cooling System	Control Panel	Voltages
<ul style="list-style-type: none"> •Oil with the machine 	<ul style="list-style-type: none"> •Protection board from hotness 	<ul style="list-style-type: none"> • Front heat protection • Coolant (-30°C) 	<ul style="list-style-type: none"> •Remote control panel • ATS • Remote controller • Synchronizing controller 	<ul style="list-style-type: none"> • 415/240V • 380/220V • 220/127V • 220/127V • 200-115V



Control Panel



Product description

- Single gen-set controller for Stand-by and Prime-power applications
- Direct communication with EFI engines
- Total remote monitoring and control

Key features

- Easy to install, configure and use
- Wide range of communication capabilities including:
 - connection via RS232, RS485, CAN and on board USB
 - internet access using Ethernet or GPRS
 - support for Modbus and SNMP protocols
- Cloud-based monitoring and control
- Active SMS and emails in different languages
- 2x 5 A binary outputs for cranking and fuel solenoid
- Option for up to 16 additional binary inputs/outputs
- Flexible event based history with up to 350 events
- Load shedding, dummy load capability
- Automatic temperature based cooling/heating
- Comprehensive gen-set protections
- Multipurpose flexible timers
- True RMS measurement

Available extension modules

Product	Description	Order code
CM-Ethernet	Ethernet interface	CM2ETHERXBX
CM-GPRS	GSM modem / wireless internet	CM2GPRSXXBX
CM-RS232-485	Dual port interface	CM223248XBX
EM-BIO8-EFCP	8 additional binary inputs/outputs	EM2BIO8EXBX

Functions and protections

Description	ANSI code	Description	ANSI code
Over voltage	59	Load shedding	32P
Under voltage	27	Overload	32
Voltage asymmetry and Phase rotation**	47	Power factor	55
Over frequency	81H	Temperature	49T
Under frequency	81L	Gas (fuel) level	71
Over current*	50 + 51	Earth fault current	50N + 64
Current unbalance	46		

* Short current only

** Fixed setting

