

Model: P1650D5

Powered by PERKINS

Output Rating

MODEL		Power rating		Voltage available		
		PRIME(1)	STANDBY(2)			
P1650D5	400V/50HZ	1200KW	1320KW	380/220V	400/230V	415/240V
	PF:0.8	1500KVA	1650KVA			

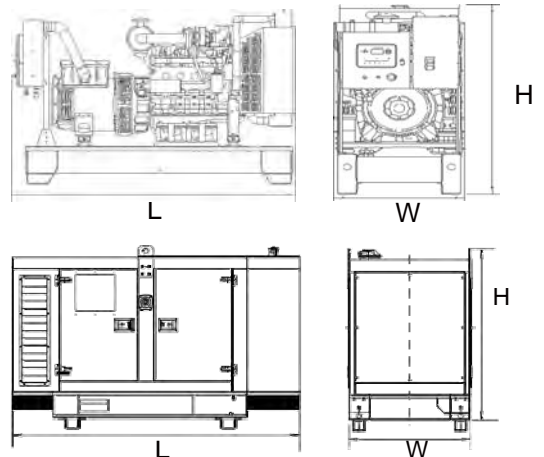
General Information

Model	P1650D5		
Engine	4012-46TAG2A		
Speed control type	Electronic		
Phase	3		
Control System	Digital		
System voltage	12V/24V		
Frequency	50HZ		
Engine Speed(RPM)	1500		
Fuel Consumption L/hr	Standby power(2)	362	
	Prime Power(1)	328	
	75% prime power	249	
	50% prime power	172	



Dimension and Weight

Dimension	Open	Silent
Length (L)	4950mm	12192mm
Width (W)	2200mm	2438mm
Height (H)	2460mm	2896mm
Net Weight	13520KG	20320KG



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 12
 Cylinder arrangement Vee, 60°
 Cycle 4 stroke
 Induction system Turbocharged
 Combustion system direct injection
 Compression ratio 13:1
 Bore 160 mm
 Stroke 190 mm
 Cubic capacity 45.842 litres
 Direction of rotation clockwise, viewed on flywheel
 Firing order 1^A, 6^B, 5^A, 2^B, 3^A, 4^B, 6^A, 1^B, 2^A, 5^B, 4^A, 3^B
 Cylinder 1 furthest from flywheel
Note: Cylinders designated 'A' are on the right hand side of the engine when

Overall dimensions of Electropak

	Unit	Tropical	Temperate
Height	mm	2260	2230
Length	mm	3971	3951
Width	mm	2192	1777

Moment of inertia

Engine 9,73 kgm²
 Flywheel 9,57 kgm²

Cooling system

Recommended coolant: 50% inhibited ethylene glycol or 50% inhibited propylene glycol and 50% clean fresh water. For combined heat and power systems (CHP) and where there is no likelihood of ambient temperature below 10 °C, then clean 'soft' water may be used, treated with 1% by volume of Perkins inhibitor in the cooling system. The inhibitor is available in 1 litre bottles from Perkins under part number 21825 735.

Maximum pressure in crankcase water jacket 170 kPa
 Maximum top tank temperature (standby) 98 °C
 Maximum static pressure head on pump 7 m

Total coolant capacity

Electronit (engine only) 73 litres
 Electropak (engine and radiator):
 -temperate 207 litres
 -tropical 210 litres
 Maximum permissible restriction to coolant pump flow 20 kPa
 Thermostat operating range 71 - 85 °C
 Ambient cooling clearance (standby power) based on air temperature at fan 6 °C above ambient.
 Temperature rise across the engines (standby power) with inhibited coolant @ 1500 rev/min 8 °C
 Coolant temperature shutdown switch setting 101 °C rising
 Coolant immersion heater capacity (2 off) 4 kW each

Radiator

Temperate

Radiator face area 2,57 m²
 Material and number of rows:
 -charge air and water jacket copper, 4 rows
 Fins per inch and material:
 -charge air and water jacket brass, 12 rows
 Width of matrix 1,608 m
 Height of matrix 1,601 m
 Weight of radiator 1117 kg
 Pressure cap setting (min) 70 kPa

Tropical

Radiator face area 3,46 m²
 Material and number of rows:
 -charge air and water jacket copper, 4 rows
 Fins per inch and material:
 -charge air and water jacket brass, 12 rows
 Width of matrix 2,10 m
 Height of matrix 1,65 m
 Weight of radiator 1620 kg
 Pressure cap setting (min) 70 kPa

4012-46TAG2A - Temperate

Designation	Units	50 Hz 1500 rev/min		
		Baseload power	Prime power	Standby power
Energy in fuel	kW	2400	3137	3500
Energy in power output (gross)	kW	1047	1309	1437
Energy to cooling fan	kW		42	
Energy in power output (nett)	kW	1005	1267	1395
Energy to exhaust	kW	800	1010	1050
Energy to coolant and oil	kW	271	428	485
Energy to radiation	kW	72	90	105
Energy to charge coolers	kW	210	300	423



▪ 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

