

## Model: P1650D5

Powered by PERKINS



### Generator Specification

Service	PRP <sup>(1)</sup>	ESP <sup>(2)</sup>
Power (kVA)	1500	1650
Power (kW)	1200	1320
Rated speed ( r.p.m )	1500	
Standard voltage (V)	400/230V	
Rated at power factor(cos phi)	0.8	



AGG Power gensets are compliant with ISO 9001 and CE standard, 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) PRP (Prime Power):

According to ISO8528-1, prime power is the maximum power available during a variable power sequence, which may be run for an unlimited number of hours per year, between stated maintenance intervals. The permissible average power output during at 24 hours period shall not exceed 80% of the prime power. 10% overload available for governing purposes only.

#### (2) ESP (Standby Power):

According to ISO 8528-1, It is defined as the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500 hours of operation per year (of which no more than 300 hours for continuative use) with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. No overload capability is available.

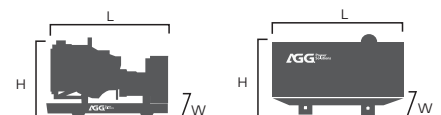
Powers Voltage (V)	ESP		PRP		Standby Amps
	KVA	KW	KVA	KW	
415/240	1650	1320	1500	1200	2295.6
400/230	1650	1320	1500	1200	2391.6
380/220	1650	1320	1500	1200	2507.0

### Performance Data

Model	P1650D5	
Engine brand	Perkins	
Engine model	4012-46TAG2A	
Speed control type	Electronic	
Phase	3	
Control system	Digital	
Starter motor voltage	24V	
Frequency	50HZ	
Engine speed (RPM)	1500	
Fuel Consumption (L/H)	100% standby power	335
	100% prime power	301
	75% prime power	237
	50% prime power	162

#### Standard reference Conditions

Note: Standard reference condition 25°C (77°F) air inlet temp, 100m(328ft) A.S.L 30% relative humidity. Fuel consumption dat with diesel fuel with specific gravity of 0.85 and conforming to BS 2869: 1998 , Class A2



### Dimension and Weight

Dimension	Open	Silent
Length (L)	4920mm	12192mm
Width (W)	2170mm	2438mm
Height (H)	2530mm	2896mm
Net Weight	9723KG	19723KG
Fuel Tank (L)	-	-

Note: This parameters allows for some acceptable deviations.

## ■ Engine Specification: 4012-46TAG2A

### Basic technical data

No. of cylinders	12
Cylinder arrangement	Vee 60°
Cycle	4 stroke
Induction system	Turbocharged
Compression ratio	13:1
Bore	160mm
Stroke	190mm
Displacement	45.8L
All ratings certified to within	TBD
Speed variation at constant load	TBD

### Cooling system

Total coolant capacity	
-with radiator	TBD
-without radiator	TBD
Maximum top tank temp	98°C
Thermostat operation range	71-85°C
Radiator face area	2.6 m <sup>2</sup>
Rows and material	TBD
Pressure cap setting	70 kPa
Fan diameter	1530 mm
Drive ratio	0.93:1
Number of blades	12

### Fuel system

Injection system	Direct
Fuel injection pump	Combined unit injector
Fuel atomiser	TBD
Nozzel opening pressure	TBD
Fuel lift pump type	Electronic
- flow/hour	TBD
- pressure	TBD
Maximum suction head:	
-1500 rev/min	TBD

### Induction system

Clean filter	2.0kpa
Dirty filter	4.0kpa
Air filter type	Paper element

### Lubrication system

Total lub capacity	177L
Sump minimum	136L
Sump maximum	159L
Maximum engine operating angles	
-front up, front down, right side	TBD
or left side	
Lubricating oil pressure	
-Relief valve opens	TBD
- at maximum no-load speed	TBD
Oil consumption at full load	
as a % of fuel consumption	TBD

### Electrical system

Type	Insulated return
Alternator voltage	24 volts
Alternator output	40 amps
Starter motor voltage	24 volts
Starter motor power	16.4 kW

### General installation

### Prime power

Combustion air flow	120 m <sup>3</sup> /min
Exhaust gas temp	TBD
Exhaust gas flow, wet	TBD
Engine coolant flow	1020l/min
Cooling fan air flow	TBD

## ■ Alternator Specification

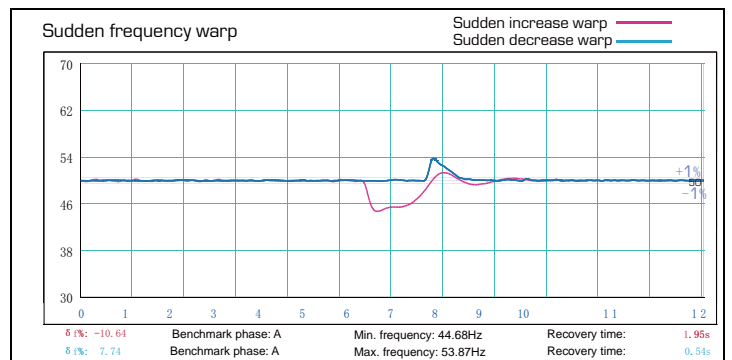
Alternator	
Number of phase	3
Power factor (Cos Phi)	0.8
Poles	4
Winding Connections (standard)	Star-serie
Terminals	12
Insulation type	H class
Winding Pitch	2/3
IP rating	IP23
Excitation system	Self-excited
Bearing	Single bearing
Coating	Vacuum impregnation
Voltage regulator	A.V.R
Couping	Flexible disc



Emergency voltage curve



Emergency frequency curve



## ■ Options

Engine	Alternator	Generator Sets	Fuel System
<ul style="list-style-type: none"> <li>Water Jacket Pre-heater</li> <li>Fuel heater</li> </ul>	<ul style="list-style-type: none"> <li>Winding Temp measuring Instrument</li> <li>Alternator Pre-heater</li> <li>PMG</li> <li>Anti-damp and anti-corrosion treatment</li> <li>Anti-condensation heater</li> <li>Winding and bearing RTD</li> </ul>	<ul style="list-style-type: none"> <li>Tools with the machine</li> <li>Extended range fuel tank</li> <li>Bunded fuel tank</li> </ul>	<ul style="list-style-type: none"> <li>Low fuel level alarm</li> <li>Automatic fuel feeding system</li> <li>Fuel T-valves</li> </ul>
Canopy	Lub oil system	Cooling System	Control Panel
<ul style="list-style-type: none"> <li>Rental type Canopy</li> <li>Trailer</li> </ul>	<ul style="list-style-type: none"> <li>Oil Pre-heater</li> <li>Oil temp sensor</li> </ul>	<ul style="list-style-type: none"> <li>Front heat protection</li> </ul>	<ul style="list-style-type: none"> <li>Remote control panel</li> <li>ATS</li> <li>Synchronizing controller</li> <li>Adjustable earth leakage relay</li> </ul>

## ■ Control Panel

### Configuration

- Emergency stop button
- Protection MCB
- Battery charger
- Integrated aviation plug
- ATS connection
- Digital control module

### Features

- 3 phase generator set monitoring
- Support of engines equipped with electronic control unit
- Comprehensive diagnostic message
- Automatic or manual start/stop of the gensets
- Push buttons for simple control, lamp test
- Graphic back-lit LCD display
- Parameters adjustable via keyboard or PC
- Mains measurements ( 50HZ/60HZ)
- Generator measurements ( 50HZ/60HZ)
- Comprehensive shutdown or warning on fault condition
- 3 phase Generator protections
  - Over-/under voltage
  - Over-/under frequency
  - Current/voltage asymmetry
  - Over current/overload
- 3 phase AMF function
  - Over-/under frequency
  - Over-/under voltage
  - Voltage asymmetry
- Configurable analog inputs
- Battery voltage, engine speed (pick-up) measurement
- Configurable programmable binary inputs and outputs
- Warm-up and cooling functions
- Generator C.B. and Mains C.B. control with feedback and return timer
- RS232 interface
- Modem communication support
- Hours counter
- Sealed to Ip65
- Event log

### Benefits

- Less wiring and components
- Integrated solution
- Less engineering and programming
- User friendly set-up and button layout
- Module can be configured to suit individual applications
- PC software for simplified configuration
- Wide range of communication capabilities

### Operation conditions

- Operation temp: -20 °C to + 70 °C
- Storage temp: -30 °C to + 80 °C
- Operating humidity: 95% w/o condensation
- Vibration : 5-25Hz,  $\pm 1.6$  mm  
5-100Hz, a=4g
- Shocks: a= 500m/s<sup>2</sup>

### Options

- Ethernet interface (Remote monitoring and control)
- GSM modem/wireless internet (Remote monitoring and control)
- RS232-RS485 Dual port interface
- Synchronizing control panel
- Distribution board with sockets kit and power busbar
- Battery trickle charge ammeter
- Earth leakage protection
- Earth fault protection
- Low fuel level alarm
- Low fuel level shutdown
- High fuel level alarm
- Fuel transfer system control
- Low coolant level shutdown
- High lube oil temp shutdown
- Overload via alarm switch on breaker
- Engine coolant heater controls
- Control panel heater
- Speed adjust switch
- Oil temp displayed on LCD screen
- Additional 8 inputs and outputs