

## Introduction

Aksa power generation system, providing optimum performance, and reliability, for stationary standby, prime power, and continuous duty applications. All generator sets are factory build, and production tested.

## Power

3 Phase, 50 Hz, PF 0.8

Voltage (V)	STANDBY RATING (ESP)		PRIME RATING (PRP)		STANDBY CURRENT (A)
	kW	kVA	kW	kVA	
400 / 231	1320.0	1650	1200.0	1500	2382

STANDBY RATING (ESP) Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. ESP is in accordance with ISO 8528-1. Overload is not allowed.

PRIME RATING (PRP) Applicable for supplying power to varying electrical load for unlimited hours. PRP is in accordance with ISO 8528-1. 10 % overload capability is available for a period of 1 hour within 12-hour period of operation.

## General Characteristics

Model Name	AP 1650
Frequency (Hz)	50
Fuel Type	Diesel
Engine Make and Model	PERKINS 4012-46TAG2A
Alternator Make and Model	Mecc Alte ECO 46-1S/4 A
Control Panel Model	DSE 7320
Canopy	AK 98

## Engine Specifications

### General Data

Manufacturer	PERKINS
Engine Model	4012-46TAG2A
Number of Cylinders / Type	12 cylinders - V type
Bore mm (in)	160



Stroke mm (in)	190
Displacement l (cu. In)	45.842
Compression Ratio	13.0:1
Engine Speed (rpm)	1500
Standby Power (kW/hp)	1459/1957
Prime Power (kW/hp)	1331/1785
Block Heater (QTY)	2
Block Heater Power (Watt)	3000
Governor System	Electronic
Air Filter	Dry Type
Aspiration	Turbo Charged

### Lubrication System

Oil Capacity l (gal)	177
Max. Oil Temperature °C (F)	105

### Fuel System

Fuel Type	Diesel
Injection Type	Direct
Type of Fuel Pump	Mechanical

### Electrical System

Operating Voltage (Vdc)	24 Vdc
Battery and Capacity (Qty/Ah)	4x143
Charge Alternator (A)	55

### Cooling System

Cooling Method	Water Cooled
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### Exhaust System

Exhaust Gas Flow (m <sup>3</sup> /min)	320
Exhaust Back Pressure in-Hg (kPa)	5
Exhaust Gas Temperature °C (F)	455
Heat Rejection to Exhaust kW (BTU/min)	1080

### Radiator

Total Coolant Capacity (l)	195.7
Cooling Fan Air Flow m <sup>3</sup> /min (ft <sup>3</sup> /min)	1762
External Restriction to Cooling Airflow (Pa)	125



### Fuel Consumption

Fuel Cons. @100% Prime Load l/h (kg/h)	309
Fuel Cons. @75% Prime Load l/h (kg/h)	236
Fuel Cons. @50% Prime Load l/h (kg/h)	164

### Alternator Characteristics

Manufacturer	Mecc Alte
Alternator Model	ECO 46-1S/4 A
Frequency (Hz)	50
Power (kVA)	1500
Voltage (V)	400
Phase	3
A.V.R.	DER1
Voltage Regulation	0.5
Insulation Class	H
Protection Class	IP23
Rated Power Factor	0.8
Weight Complete Generator (kg)	3010
Cooling Air (m <sup>3</sup> /min)	135

### Open Generator Set Dimensions

Length mm	4920
Width mm	2151
Height mm	2438
Open Gen.Set Gross Weight Dry kg	10200
Full Tank Capacity (l)	2000

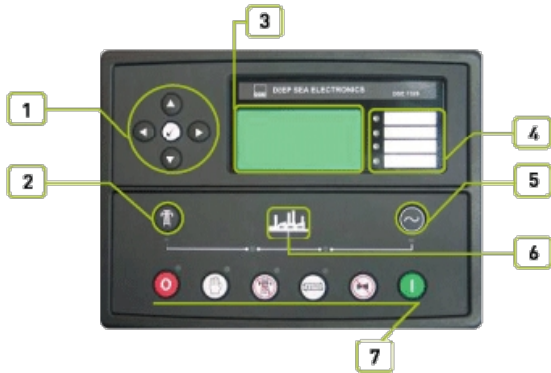
### Canopy Characteristics

Length mm	9000
Width mm	2270
Height mm	2581
Dry Weight kg	14300
Full Tank Capacity (l)	1900

### Control Panel



Manufacturer	DSE
Control Module Model	DSE 7320
Communication Ports	MODBUS



1. Menu navigation buttons
2. Close mains button
3. Main Status and instrumentation display
4. Alarm LED's
5. Close generator button
6. Status LED's
7. Operation selecting buttons

### Standard Devices

DSE model 7320, Auto Mains Failure control module, with a highly sophisticated level of new features and functions  
 Static battery charger, Fuses for control circuits

### Control Unit

- The DSE 7320 control module is a standard addition to our generator sets from 220 kVA upwards and it has been designed to start and stop diesel and gas generating sets that include electronic and non electronic engines.
- The DSE 7320 includes the additional capability of being able to monitor a mains (utility) supply and is therefore suitable for controlling a standby generating set in conjunction with an automatic transfer switch.
- The DSE7320 also indicates operational status and fault conditions, automatically shutting down the generating set and indicating faults by means of its LCD display on the front panel.

### Construction and Finish

- Components installed in sheet steel enclosure.
- Phosphate chemical, pre-coating of steel provides corrosion resistant surface
- Polyester composite powder topcoat forms high gloss and extremely durable finish
- Lockable hinged panel door provides for easy component access

### Installation

The Control panel is mounted at the generating set baseframe on robust steel stand or power module. Located at side of generating set with properly panel visibility.

### Engine

- Engine speed
- Oil pressure
- Coolant temperature
- Run time
- Battery volts
- Engine maintenance due

### Shut Down

- Fail to start
- Emergency stop
- Low oil pressure
- High engine temperature
- Low coolant level
- Under/over speed
- Under/over generator frequency
- Under/over generator voltage

### Warnings

- Charge failure
- Battery under voltage
- Fail to stop
- Low fuel level (opt.)
- kW over load
- Negative phase sequence
- Loss of speed signal



- Oil pressure sensor open
- Phase rotation

### Generator

- Voltage (L-L, L-N)
- Current (L1-L2-L3)
- Frequency
- Earthcurrent
- kW
- Pf
- kVAr
- kWh, kVAh, kVArh
- Phasesequence

### Pre-alarms

- Low oil pressure
- High engine temperature
- Low engine temperature
- Under/over speed
- Under/over generator frequency
- Under/over generator voltage
- ECU warning

### Electrical Trip

- Earth fault
- kW over load
- Generator over current
- Negative phase sequence

### Mains

- Voltage (L-L, L-N)
- Frequency

### Expansions

- Additional LED module (2548)
- Expansion relay module (2157)
- Expansion input module (2130)

### Options

- High oil temperature shut down
- Low fuel level shut down
- Low fuel level alarm
- High fuel level alarm

### Control Panel Compliance List

- Electrical Safety / Electro Magnetic Compatibility (EMC)
- BS EN 61000-6-2 EMC Generic Immunity Standard
- BS EN 61000-6-4 EMC Generic Emission Standard
- BS EN 60950 Electrical Safety

### Static Battery Charger

- Battery charger is manufactured with switching-mode and SMD technology and it has high efficiency.
- Battery charger models' output V-I characteristic is very close to square
- 2405 has fully output short circuit protection and it can be used as a current source.
- 2405 charger has high efficiency, long life, low failure rate, light-weight and low heat radiated in accordance with linear alternatives.
- The charger is fitted with a protection diode across the output.
- Charge fail output is available.
- Connect charge fail relay coil between positive output and CF output.
- Input: 196-264V.
- Output: 27,6V 5A or 13,8V 5A.

### Standard Equipment

- Water cooled, Diesel engine
- Radiator with mechanical fan
- Protective grille for rotating and hot parts
- Electric starter and charge alternator
- Starting battery (with lead acid) including rack and cables
- Engine coolant heater
- Steel base frame and anti-vibration isolators
- Spare external fuel tank
- Flexible fuel connection hoses
- Single bearing, class H alternator



- Industrial exhaust silencer and steel bellows supplied separately(for open sets)
- Static battery charger
- Manual for application and installation

## Optional Equipment

### Engine

- Fuel-Water Separator Filter
- Oil heater

### Control Panel

- Automatic synchronising and power control system (Multi gen-set Parallel)
- Parallel system with mains
- Transition synchronization with mains
- Alarm output relays
- Earth fault, single set
- Parallel system with mains
- Remote relay output
- Remote communication with modem
- Charge Ammeter

### Auxiliary Equipment

- Main Fuel Tank
- Automatic or manual fuel filling system
- Electrical or manual oil drain pump
- Low and high fuel level alarm
- Inlet and outlet motorized louvers
- Inlet and outlet acoustic baffles
- Tool kit for maintenance
- 1500/3000 hours maintenance kit
- Supplied with oil and coolant (-30°C)

### Canopy

- Galvanized Coating
- ISO Container
- Marine Grade Paint

## Aksa Certificates

### Directive

- 2006/42/EC : Machinery Safety Directive
- 2014/30/EU : Electromagnetic Compatibility Directive
- 2014/35/EU : Low Voltage Directive

### Standarts

- TS ISO 8528-5:2022 / TS EN ISO 8528-13:2018 : Reciprocating internal combustion engine-driven alternating current generating sets- Part:13: Safety

### Alternator

- Anti-Condensation Heater
- Over sized alternator
- PMG excitation + AVR
- Main line circuit breaker

### Transfer Panel

- Three or four pole contactor
- Three or four pole motor operated circuit breaker

### Exhaust

- Residential Silencer
- Silencer Spark Arrester
- Critical Silencer
- Catalytic Converter

### Optional Alternator and Control Panel

Please contact to your reseller for additional Alternator, Control Panel and Breaker Switch options.



Quality Management Systems

- ISO 9001:2015
- ISO 14001:2015
- ISO 45001:2018
- ISO 50001:2018
- ISO 27001:2013
- ISO 10002:2018