Industrial Generator Set - KD110

Ratings Range

400/230 V - 50 Hz

Standby	**kW**	88
	kVA	110
Prime	**kW**	80
	kVA	100

Benefits and features

Rehlko premium quality
- Design offices using the latest technical innovations
- Modern fully certified factories
- A cutting edge laboratory
- The generating set, its components and a wide range of options have been fully developed, prototype tested, factory built, and production tested
- Approved for use with HVO (Hydrotreated Vegetable Oil) according to EN15940

Rehlko premium performances
- Optimized and certified sound levels
- Reliable power, even in extreme conditions
- Optimized fuel consumption
- Compact footprint
- Best quality of electricity, high starting and loading capacity, according to ISO8528-5
- Robust base frames and high-quality enclosures
- Protection of installations and people
- Approved in line with the most stringent standards

Engines
- Rehlko Premium level engines
- High power density, small footprint
- Low temperature starting capability
- Long maintenance interval

Alternator
- Provide industry leading motor starting capability
- Built with a class H insulation and IP23

Cooling
- A compact and complete solution using a mechanically driven radiator fan
- Designed or optimized by Rehlko
- High temperature and altitude product capacity available

Base frame and enclosure
- High quality steel with enhanced corrosion resistance
- Highly durable QUALICOAT-certified epoxy paint
- Minimum 1500 hours of resistance to salt spray in accordance with ISO12944
- Ergonomic access to allow easy maintenance and connection of the generator
- Robust design optimized for transportation

General Specifications

Manufacturer	Rehlko
Engine ref.	KD39L04T-AA56
Alternator choices	KH00753T KH00754T
Performance class	G3
Voltage (V)	400/230 230 TRI 380/220 415/240 240 TRI
Controllers	APM303 APM403
Consumption @ 100% load ESP (L/h)*	26
Consumption @ 100% load PRP (L/h)*	23
Emission level	Not certified
Type of Cooling	Radiator
Factory installed enclosures	M147 M147-DW M147-DW48

"* Volumetric Fuel consumption is up to 4% higher when using HVO than Diesel Fuel"

Generator sets ratings

		Standby rating			Prime rating	
	Hz	kWe	kVA	Amps	kWe	kVA
400/230	50	88	110	159	80	100
230 TRI	50	88	110	276	80	100
380/220	50	88	110	167	80	100
415/240	50	88	110	153	80	100
240 TRI	50	88	110	265	80	100

Engine Specifications	
Engine brand	REHLKO
Engine ref.	KD39L04T-AA56*
Air inlet system	Turbo
Cylinder configuration	4 - L
Displacement (l)	3,92
Bore (mm) x Stroke (mm)	102 x 120
Compression ratio	18.0:1
Speed 50Hz (RPM)	1500
Maximum stand-by power at rated RPM (kW)	106
Governor type	Electronic
Frequency regulation, steady state (%)	+/- 0.5%
Lubrication System	
Oil Filter Quantity and type****	Spin On / 1
Charge Air coolant	Air/Air

*****Rehlko recommends the use of genuine oil and filters.*

Fuel System	
Maximum fuel pump flow (l/h)	41
Fuel filter: Qty, type	1 / 1 Primary Engine Filter / Fuel Water Separator
Fuel	Diesel Fuel

* Engine reference may be partially modified depending on genset application, options selected by the customer and lead time required.

Consumption with cooling system	
Fuel consumption @ ESP Max Power (l/h)	27,1
Fuel consumption @ PRP Max Power (l/h)	24,1
Fuel consumption @ 75% of PRP Power (l/h)	18
Fuel consumption @ 50% of PRP Power (l/h)	12
Cooling system	
Ambient temperature design (°C)	40
Radiator & Engine capacity (l)	17,6
Fan power 50Hz (kW)	3,58
Fan air flow w/o restriction (m3/s)	1,4
Available restriction on air flow (mm H2O)	0
Type of coolant	Glycol-Ethylene
Radiated heat to ambiant (kW)	21
Heat rejection to coolant HT (kW)	46
Coolant capacity HT, engine only (l)	7,2
Outlet coolant temperature (°C)	
Max coolant temperature, Shutdown (°C)	104
Thermostat begin of opening HT (°C)	82
Thermostat end of opening HT (°C)	95

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Exhaust system	
Exhaust gas temperature @ ESP (°C)	501
Exhaust gas flow @ ESP (l/s)	320
Electrical system	
Battery voltage (V)	12
Air Intake system	
Combustion air flow (l/s)	130
Radiated heat to ambiant (kW)	21

Alternator Specifications	
Number of pole	4
Technology	Brushless
AVR Regulation	Yes
Insulation class	H
Indication of protection	IP23
Number of bearing	1
Number of wires	06
Coupling	Direct
Overspeed (rpm)	2250
Voltage regulation at established rating (+/- %)	0,5
Unbalanced load acceptance ratio (%)	8

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Alternator standard features

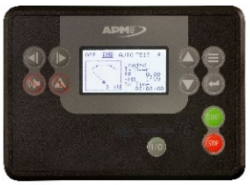
- All models are brushless, rotating-field alternators
- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting
- The AVR voltage regulator provides superior short circuit capability
- Self-ventilated and dip proof constructio
- Superior voltage waveform

Note: See Alternator Data Sheets for alternator application data and ratings, efficiency curves, voltage dip with motor starting curves, and short circuit decrement curves.

APM303 controller
The APM303 is a versatile unit which can be operated in manual or automatic mode. It offers the following features:

- Measurements: phase-to-neutral and phase-to-phase voltages, fuel level (In option : active power currents, effective power, power factors, Kw/h energy meter, oil pressure and coolant temperature levels)
- Supervision: Modbus RTU communication on RS485
- Reports: (In option : 2 configurable reports)
- Safety features: Overspeed, oil pressure, coolant temperatures, minimum and maximum voltage, minimum and maximum frequency (Maximum active power P<66kVA)
- Traceability: Stack of 12 stored events

For further information, please refer to the data sheet for the APM303



APM403 controller
The APM403 is a versatile control unit which allows operation in manual or automatic mode

- Measurements : voltage and current
- kW/kWh/kVA power meters
- Standard specifications: Voltmeter, Frequency meter.
- Optional : Battery ammeter.
- J1939 CAN ECU engine control
- Alarms and faults: Oil pressure, Coolant temperature, Overspeed, Start-up failure, alternator min/max, Emergency stop button.
- Engine parameters: Fuel level, hour counter, battery voltage.
- Optional (standard at 24V): Oil pressure, water temperature.
- Event log/ Management of the last 300 genset events.
- Mains and genset protection
- Clock management
- USB connections, USB Host and PC,
- Communications : RS485 INTERFACE
- ModBUS protocol /SNMP
- Optional : Ethernet, GPRS, remote control, 3G, 4G
- Websupervisor, SMS, E-mails

Codes and Standards

Engine-generators set is designed and manufactured in facilities certified to standards ISO9001:2015 & ISO14001:2015. The generator sets and its components are prototype-tested, factory built and production tested and are in compliance with the relevant standards:

- Machinery Directive 2006/42/EC of May 17th 2006
- EMC Directive2014/30/UE
- Safety objectives set out in the Low Voltage Directive 2014/35/UE
- EN ISO 8528-13, EN 60034-1, EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 55011, EN 1679-1 et EN 60204-1

Power ratings definition according to ISO8528-1 (2018-02 edition) and ISO-3046-1

Emergency Standby Power (ESP): The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Average load factor per 24 hours of operation is <70%.
Prime Power (PRP): At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour within 12 hour of operation. Average load factor per 24 hours of operation is <70%.

Warranty informations

Standard warranty period:

- for Products in "back-up" service
  - 36 months from the date the Product leaves the plant
  - 24 months from the Product’s commissioning date
  - 1,000 running hours

The warranty expires when one of the above conditions is met.

- for Products in “prime” or "continuous" service (continuous supply of electricity, either in the absence of any normal electricity grid or to complement the grid),
  - 18 months from the date the Product leaves the plant
  - 12 months from the Product’s commissioning date
  - 2,500 running hours

The warranty expires when one of the above conditions is met.
For more details regarding conditions of application and scope of the warranty please refer to our General “terms & conditions of sales”.

Standard scope of supply:

All our open gensets are fitted with:

- Industrial water-cooled DIESEL engine
- Engine electronic governor
- Electric starter & charge alternator
- Battery(1)
- Standard air filter
- Electric circuit breaker, adapted to the short-circuit current of the generating set
- Single bearing alternator IP 23 T° rise/ insulation to class H/H
- Welded steel base frame with 85% vibration attenuation mounts
- frame height optimized to allow it to be moved safely by forklift
- enclosure made of new high-quality European steel with enhanced corrosion resistance
- enclosures and base frames tested and analyzed by the French Corrosion Institut
- 100% of tanks tested for permeability
- Personal protection ensured by protective grilles on hot and rotating parts
- Separate 9 dB(A) silencer
- Fuel tank welded inside the genset frame
- Retention bund included for gensets up to 250 kVA ESP
- Emergency stop button on the outside
- Flexible fuel lines & lub oil drain cock
- Oil(2) and antifreeze liquid(2)
- Exhaust outlet with flexible and flanges
- User’s manual (1 copy)
- Packing under plastic film

(1) excluded from the supply up to 165 kVA ESP if assembled outside Europe
(2) excluded from the supply up to 830 kVA ESP if assembled outside Europe

Dimensions and Weights

Compact version	
Overall Size, max., L x W x H, (mm)	1893 x 1068 x 1314
Dry weight (kg)	1080
Tank capacity (L)	181

M147 - Dimensions soundproofed version	
Overall Size, max., L x W x H, (mm)	2470 x 1109 x 1460
Tank capacity (L)	181
Dry weight (kg)	1310
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	97
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	80
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	70

Dimensions DW compact version	
Overall Size, max., L x W x H, (mm)	2451 x 1068 x 1456
Tank capacity (L)	568
Dry weight (kg)	1190

M147 - Dimensions DW soundproofed version	
Overall Size, max., L x W x H, (mm)	2470 x 1109 x 1602
Tank capacity (L)	568
Dry weight (kg)	1500
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	97
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	80
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	70

Dimensions DW 48h compact version	
Overall Size, max., L x W x H, (mm)	2451 x 1068 x 1679
Tank capacity (L)	999
Dry weight (kg)	1290

M147 - Dimensions DW 48h soundproofed version	
Overall Size, max., L x W x H, (mm)	2470 x 1109 x 1825
Tank capacity (L)	999
Dry weight (kg)	1590
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	97
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	80
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	70

** dimensions and weight without options*

Reference Conditions: 25°C Air Inlet Temperature, 40°C Fuel Inlet Temperature, 100 kPa Barometric Pressure; 10.7 g/kg of dry air Humidity. Intake Restriction set to maximum allowable limit for clean filter; Exhaust Back pressure set to maximum allowable limit; Fuel density at 0.85 kg/L.
Data was taken from a single engine test according to the test methods, fuel specification and reference conditions stated above and is subjected to instrumentation and engine-to-engine variability. Test conducted with alternate test methods, instrumentation, fuel or reference conditions can yield different results. Data and specifications subject to change without notice.