Industrial Generator Set - KD3500-F
Fuel Consumption Optimized



Ratings Range

400/230 V - 50 Hz

Standby	**kW**	2881
	kVA	3601
Prime	**kW**	2619
	kVA	3274

Benefits and features

Rehlko premium quality
- Rehlko provides **one source responsibility** for the generating set and accessories
- The generator set, its components and a wide range of options have been **fully developed, prototype tested, factory built**, and production-tested
- Generators sets are designed in accordance with ISO8528-5, performance class G3.
- Generators sets accept the rated load in one step outside the ISO8528-5 operating limit values.
- Approved for use with HVO (Hydrotreated Vegetable Oil) according to EN15940

Rehlko premium performances

Engines
- Low fuel consumption thanks to a high technology common rail injection engine
- A smaller footprint thanks to a high power density
- Low temperature starting capability
- Long maintenance interval

Alternator
- Provide industry leading motor starting capability
- Excitation system to permit sustained overcurrent > 300% In, during 10 sec
- Built with a class H insulation and IP23

Cooling
- A flexible solution using an electrical driven radiator fan
- High temperature and altitude product capacity available

Control panel
- The Rehlko wide controller range provide the reliability and performances you expect from your equipment. You can program, manage and diagnose it easily and in an efficient way

Rehlko worldwide support
- A standard three-year or 1000-hour limited warranty for standby applications.
- A standard two-year or 8700-hour limited warranty for prime power applications.
- A worldwide product support

General Specifications

Manufacturer	Rehlko
Engine ref.	KD83V16A-5CFS
Alternator choices	KH07830T KH09260T
Performance class	G3
One step load acceptance (out of ISO criteria)	100%
Controllers	M80-D APM403 APM802 APM804
Consumption @ 100% load ESP (L/h)*	0
Consumption @ 100% load PRP (L/h)*	0
Emission level	Fuel consumption optimization
Max. Data Center Continuous (DCC) Rating	3601 kVA 2881 kWe
Type of Cooling	Without cooling
Factory installed enclosures	

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

Conscious Care$_{TM}$ Qualified

Reduce operating costs, fuel consumption, and greenhouse gas emissions with Conscious CareTM maintenance program.

Generator sets ratings

			Standby rating			Prime rating	
Voltage (V)	Cooling	Version	kWe	kVA	Amps	kWe	kVA
400/230 - 50 Hz	Without cooling	Open	2881	3601	5198	2619	3274
400/230 - 50 Hz	Radiator	Open	2800	3500	5052	2546	3182

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Engine Specifications	
Engine brand	Rehlko
Engine ref.	KD83V16A-5CFS*
Air inlet system	Turbo
Cylinder configuration	16 - V
Displacement (l)	82,74
Bore (mm) x Stroke (mm)	175 x 215
Compression ratio	16 : 1
Speed 50Hz (RPM)	1500
Maximum stand-by power at rated RPM (kW)	3007
Governor type	Electronic
Frequency regulation, no-load to full-load	Isochronous
Frequency regulation, steady state (%)	+/- 0.25%

Lubrication System	
Oil Filter Quantity and type****	8 / Spin on
Charge Air coolant	Water/Air

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

Fuel System	
Maximum fuel pump flow (l/h)	1042
Max head on fuel return line (m fuel)	3,5
Fuel	Diesel Fuel/HVO

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

Consumption with cooling system

At % load of Engine power rating	g/kWh	L/h**
100%	191	675,7
75%	194	514,7
50%	203	359,1
25%	226	199,9

***Assumed volumetric fuel consumption with diesel fuel having an LHV of 42.7kJ/kg and weighting 0.85kg/L.*

Optional cooling system (HT/LT)	
Free	GLYCOL
Radiated heat to ambiant (kW)	140
Heat rejection to coolant HT (kW)	930
HT circuit flow rate (l/min)	2040
Outlet coolant temperature (°C)	100
Coolant capacity HT, engine only (l)	237
Max coolant temperature, Shutdown (°C)	105
Restriction pressure drop off engine – HT circuit (mbar)	700
Minimal pressure before HT pump (mbar)	400
Max. pressure at inlet of HT water pump (mbar)	2500
Thermostat begin of opening HT (°C)	71
Thermostat end of opening HT (°C)	81
HT Standard pressure cap setting (kPa)	100
Heat rejection to coolant LT (kW)	660
LT circuit flow rate (l/min)	590
Temperature of inlet to LT engine water circuit (°C)	45
Coolant capacity LT, engine only (l)	80
Restriction pressure drop off engine – LT circuit (mbar)	700
Minimal pressure before LT pump (mbar)	400
Max. pressure at inlet of LT water pump (mbar)	2500
LT Standard pressure cap setting (kPa)	100

Exhaust system	
Heat rejection to exhaust (kW)	2170
Exhaust gas temperature @ ESP (°C)	478
Exhaust gas flow @ ESP (l/s)	8952
Electrical system	
Battery voltage (V)	24
Air Intake system	
Combustion air flow (l/s)	3376
Radiated heat to ambiant (kW)	140

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

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 construction
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds
- 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.



M80-D controller
The M80-D can be used as a basic terminal block for connecting a control unit and as an instrument panel with a highly intuitive LCD screen giving an overview of your generating set's basic parameters:

- Oil gauge
- Coolant temperature
- Oil temperature
- Engine speed
- Battery voltage
- Charge air temperature
- Fuel consumption, etc.

The engine main functions can be controlled and events are recorded to facilitate diagnostics:

- Starting
- Speed adjustment
- Stopping
- Droop, etc.



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



APM804 controller
Advanced power plant management control unit
Dedicated to power plant management, the APM804 provides advanced control, system monitoring and diagnostics for optimum performance and compatibility.

- Integrated 12” colour touchscreen
- Intuitive and ergonomic user interface
- High level of reliability for continuous operation
- Event logging and time-stamped alarms
- Extended connectivity: Ethernet, RS-485, CAN FD, USB-C

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 <85%.
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 <75%.
Data Center Mission Critical (DCP): Data Center Mission Critical power is defined as being the maximum power which a generating set is capable of delivering while supplying a variable or continuous electrical load and during unlimited run hours. Depending on the sites to supply and the availability of reliable utility, the generating set manufacturer is responsible to define what power level is able to supply to fulfil that requirement including hardware or software or maintenance plan adaptation.

Warranty informations

Standard warranty period:

- for Products in "back-up" service
  - 30 months from the date the Product leaves the plant, extended to 42 months for KD series
  - 24 months from the Product’s commissioning date, extended to 36 months for KD series
  - 1,000 running hours

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

- for Products in "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, extended to 30 months for KD series
  - 12 months from the Product’s commissioning date, extended to 24 months for KD series
  - 2,500 running hours, extended to 8700 running hours for KD series

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 KD Series gensets are fitted with:

- Industrial water cooled DIESEL engine
- Electric starter & charge alternator 24 V D.C
- Electronic governor
- Standard air filter
- Single bearing alternator IP 23 T° rise/ insulation to class H/H
- Welded steel base frame with 85% vibration attenuation mounts
- M80-D control panel
- Flexible fuel lines & lub oil drain pump
- Fuel water separator filter
- Exhaust outlet with flexible and flanges
- User’s manual (1 copy)
- Packing under plastic film
- Delivered with oil

- Communication protocols: Modbus RTU / TCP, SNMP v3, BACnet
- Advanced industrial cybersecurity (security by design)
- Complies with international standards and references (NFPA 110, IEC 62443, CE, UL)

Dimensions and Weights

Compact version – Without cooling	
Overall Size, max., L x W x H, (mm)	5300 x 2442 x 2598
Dry weight (kg)	20440
Tank capacity (L)	0



** 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.