Industrial Generator Set - KD1400-F
Fuel Consumption Optimized



Ratings Range

400/230 V - 50 Hz

Standby	**kW**	1136
	kVA	1420
Prime	**kW**	1033
	kVA	1291

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 compact and complete solution using a mechanically 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.	KD36V16-5BFS
Alternator choices	KH04830T
Performance class	G3
One step load acceptance (out of ISO criteria)	100%
Controllers	M80-D APM403 APM802 APM804
Consumption @ 100% load ESP (L/h)*	283
Consumption @ 100% load PRP (L/h)*	257
Emission level	Fuel consumption optimization
Max. Data Center Continuous (DCC) Rating	1420 kVA 1136 kWe
Type of Cooling	Radiator
Factory installed enclosures	M428 M428-SSI ISO20 ISO20SSI

"* 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	Radiator	Open	1136	1420	2050	1033	1291
380/220 - 50 Hz	Radiator	Open	1136	1420	2158	1033	1291
415/240 - 50 Hz	Radiator	Open	1136	1420	1976	1033	1291
415/240 - 50 Hz	Radiator	M428	1136	1420	1976	1033	1291
400/230 - 50 Hz	Radiator	M428	1136	1420	2050	1033	1291
380/220 - 50 Hz	Radiator	M428	1136	1420	2158	1033	1291
415/240 - 50 Hz	Radiator	ISO20 Si	1136	1420	1976	1033	1291
400/230 - 50 Hz	Radiator	ISO20 Si	1136	1420	2050	1033	1291
380/220 - 50 Hz	Radiator	ISO20 Si	1136	1420	2158	1033	1291

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Engine Specifications	
Engine brand	Rehlko
Engine ref.	KD36V16-5BFS*
Air inlet system	Turbo
Cylinder configuration	16 - V
Displacement (l)	35,96
Bore (mm) x Stroke (mm)	135 x 157
Compression ratio	15 : 1
Speed 50Hz (RPM)	1500
Maximum stand-by power at rated RPM (kW)	1238
Governor type	Electronic
Frequency regulation, no-load to full-load	Isochronous
Frequency regulation, steady state (%)	+/- 0.25%
Lubrication System	
Oil Filter Quantity and type****	Spin On / 4
Charge Air coolant	Air/Air

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

Fuel System	
Maximum fuel pump flow (l/h)	292,7
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%	196	285,5
75%	192	209,7
50%	196	142,7
25%	210	76,5

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

Cooling system	
Ambient temperature design (°C)	40
Radiator & Engine capacity (l)	255
Fan power 50Hz (kW)	40
Fan air flow w/o restriction (m3/s)	23
Available restriction on air flow (mm H2O)	25
Free	Gencool
Radiated heat to ambiant (kW)	87
Heat rejection to coolant HT (kW)	478
HT circuit flow rate (l/min)	1723
Coolant capacity HT, engine only (l)	124
Outlet coolant temperature (°C)	100
Max coolant temperature, Shutdown (°C)	105
Max. pressure at inlet of HT water pump (mbar)	1000
Thermostat begin of opening HT (°C)	82
Thermostat end of opening HT (°C)	92

Exhaust system	
Heat rejection to exhaust (kW)	873
Exhaust gas temperature @ ESP (°C)	541
Exhaust gas flow @ ESP (l/s)	3320
Electrical system	
Battery voltage (V)	24
Air Intake system	
Combustion air flow (l/s)	1144
Radiated heat to ambiant (kW)	87

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	12
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
- Radiator with coolant
- 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 80% vibration attenuation mounts
- Flexible fuel lines & lub oil drain pump
- Fuel water separator filter
- Exhaust outlet with flexible and flanges
- M80-D control panel
- User’s manual (1 copy)
- Packing under plastic film
- Delivered with oil
- Delivered with antifreeze liquid

- 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 – Radiator	
Overall Size, max., L x W x H, (mm)	4665 x 1900 x 2380
Dry weight (kg)	8600
Tank capacity (L)	432



M428 - Dimensions soundproofed version – Radiator	
Overall Size, max., L x W x H, (mm)	6800 x 2160 x 2550
Tank capacity (L)	1035
Dry weight (kg)	10800
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	109
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	88
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	79



M428 SSi - Dimensions super soundproofed version – Radiator	
Overall Size, max., L x W x H, (mm)	6800 x 2160 x 2550
Tank capacity (L)	1035
Dry weight (kg)	11000
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	106
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	85
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	76

Container dimensions ISO20 soundproofed version – Radiator	
Overall Size, max., L x W x H, (mm)	6058 x 2438 x 2896
Tank capacity (L)	432
Dry weight (kg)	15800
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	112
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	91
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	82



Container dimensions ISO20 super soundproofed version – Radiator	
Overall Size, max., L x W x H, (mm)	9140 x 2438 x 2896
Tank capacity (L)	432
Dry weight (kg)	16700
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	103
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	85
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	76



** 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.