# Industrial Generator Set - V440C2



## Ratings Range

**400/230 V - 50 Hz**

| | | |
|---|---|---|
| **Standby** | **kW** | 352 |
| | **kVA** | 440 |
| **Prime** | **kW** | 320 |
| | **kVA** | 400 |

## 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**
- Premium level engines, in-house or from strong partners
- High power density, small footprint
- Low temperature starting capability
- Long maintenance interval

**Alternator**
- Provide industry leading motor starting capability
- Made in Europe
- 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 1000 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. | TAD1344GE-B |
| Alternator choices | KH01484T<br>KH01743T |
| Performance class | G3 |
| Controllers | APM403 M80-D Terminal block |
| Consumption @ 100% load ESP (L/h)* | 87 |
| Consumption @ 100% load PRP (L/h)* | 79 |
| Emission level | Emission optimization - Stage II Compliant |
| Max. Data Center Continuous (DCC) Rating | Same as the Prime Rating below |
| Type of Cooling | Radiator |
| Factory installed enclosures | M238<br>M238-DW<br>M238-DB<br>M238-DW-DB |

"* 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 | 352 | 440 | 635 | 320 | 400 |
| 380/220 | 50 | 352 | 440 | 669 | 320 | 400 |
| 200/115 | 50 | 352 | 440 | 1270 | 320 | 400 |
| 240 TRI | 50 | 352 | 440 | 1059 | 320 | 400 |
| 230 TRI | 50 | 352 | 440 | 1105 | 320 | 400 |
| 415/240 | 50 | 352 | 440 | 612 | 320 | 400 |

# Industrial Generator Set - V440C2

| Engine Specifications | |
|---|---|
| Engine brand | Volvo |
| Engine ref. | TAD1344GE-B* |
| Air inlet system | Turbo |
| Cylinder configuration | 6 - L |
| Displacement (l) | 12,78 |
| Bore (mm) x Stroke (mm) | 131 x 158 |
| Compression ratio | 18.5 : 1 |
| Speed 50Hz (RPM) | 1500 |
| Maximum stand-by power at rated RPM (kW) | 399 |
| Governor type | Electronic |
| Frequency regulation, no-load to full-load | Isochronous |
| Frequency regulation, steady state (%) | +/- 0.25% |

| Lubrication System | |
|---|---|
| Oil Filter Quantity and type**** | |
| Charge Air coolant | Air/Air |

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

| Fuel System | |
|---|---|
| Maximum fuel pump flow (l/h) | 120 |
| Max head on fuel return line (m fuel) | 2,4 |
| 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 | |
|---|---|
| Fuel consumption @ ESP Max Power (l/h) | 90,6 |
| Fuel consumption @ PRP Max Power (l/h) | 82,2 |
| Fuel consumption @ 75% of PRP Power (l/h) | 62,3 |
| Fuel consumption @ 50% of PRP Power (l/h) | 42,4 |

| Cooling system | |
|---|---|
| Radiator & Engine capacity (l) | 44 |
| Fan power 50Hz (kW) | 10 |
| Fan air flow w/o restriction (m3/s) | 6,5 |
| Available restriction on air flow (mm H2O) | 20 |
| Free | Glycol-Ethylene |
| Radiated heat to ambiant (kW) | 15 |
| Heat rejection to coolant HT (kW) | 155 |
| HT circuit flow rate (l/min) | 300 |
| Coolant capacity HT, engine only (l) | 20 |
| Max coolant temperature, Shutdown (°C) | 107 |
| 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) | 266 |
| Exhaust gas temperature @ ESP (°C) | 465 |
| Exhaust gas flow @ ESP (l/s) | 1125 |
| **Electrical system** | |
| Battery voltage (V) | 24 |
| **Air Intake system** | |
| Combustion air flow (l/s) | 467 |
| Radiated heat to ambiant (kW) | 15 |

| 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 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.*



**Basic terminal block**
It is used as a basic terminal block for connecting a control unit. Offers the following functions:

- emergency stop button
- customer connection terminal block
- CE certified

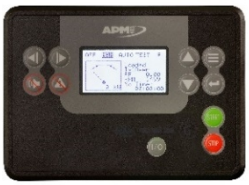


**M80-D controller**
The M80-D can be used as a basic terminal block for connecting a control unit and as an instrument panel with a highly intuitive LCD screen giving an overview of your generating set's basic parameters:

- 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

## 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),
  - 24 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 gensets are fitted with:

- Industrial water cooled DIESEL engine
- Electric starter & charge alternator
- Standard air filter
- Schneider or ABB 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
- 4 lifting points on the chassis, lifting bar on the top included from 165 kVA ESP or optional
- highly durable QUALICOAT certified epoxy paint
- frame height optimized to allow it to be moved safely by forklift
- enclosure made of new high-quality European steel with enhanced corrosion resistance
- IP 64 locks, made from stainless materials
- 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
- Fuel tank welded inside the genset frame
- Retention bund included for gensets up to 110 kVA ESP
- Charged DC starting battery with electrolyte
- Emergency stop button on the outside
- Flexible fuel lines & lub oil drain cock
- Exhaust outlet with flexible and flanges
- User’s manual (1 copy)
- Packing under plastic film
- Delivered with oil and antifreeze liquid

## Dimensions and Weights





| Tank capacity (L) | Overall Size, max., L x W x H, (mm) | | | Dry weight (kg) | Sound levels | | |
|---|---|---|---|---|---|---|---|
| | Length (mm) | Width (mm) | Height (mm) | | Sound power level guaranteed (Lwa) 50Hz (75% PRP) | Acoustic pressure level @1m in dB(A) 50Hz (75% PRP) | Acoustic pressure level @7m in dB(A) 50Hz (75% PRP) |
| **Dimensions compact version – Radiator** | | | | | | | |
| 600 | 3340 | 1496 | 1742 | 3210 | | | |
| **M238 soundproofed version – Radiator** | | | | | | | |
| 597 | 4879 | 1560 | 2450 | 4380 | 101 | 81 | 71 |
| **Dimensions DW compact version – Radiator** | | | | | | | |
| 1760 | 4919 | 1560 | 2002 | 3800 | | | |
| **M238 - Dimensions DW soundproofed version – Radiator** | | | | | | | |
| 1759 | 4919 | 1560 | 2710 | 4970 | 101 | 81 | 71 |
| **M238 soundproofed version - In compliance with 2000/14/CE standard – Radiator** | | | | | | | |
| 597 | 4879 | 1560 | 2450 | 4380 | 98 | 78 | 68 |
| **M238 DW soundproofed version - In compliance with 2000/14/CE standard – Radiator** | | | | | | | |
| 1759 | 4919 | 1560 | 2710 | 4970 | 98 | 78 | 68 |

** 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.