Industrial Generator Set - V650C2

Ratings Range

		400/230 V - 50 Hz
Standby	**kW**	520
	kVA	650
Prime	**kW**	473
	kVA	591

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.	TAD1642GE-B
Alternator choices	KH02713T KH02954T
Performance class	G3
Voltage (V)	400/230 380/220 200/115 240 TRI 230 TRI 415/240 220/127
Controllers	APM403 M80-D Terminal block
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	M240 M240-DW

"* 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	520	650	938	473	591
380/220	50	520	650	988	473	591
200/115	50	520	650	1876	473	591
240 TRI	50	520	650	1564	473	591
230 TRI	50	520	650	1632	473	591
415/240	50	520	650	904	473	591
220/127	50	527	659	1729	479	599

Engine Specifications	
Engine brand	Volvo
Engine ref.	TAD1642GE-B*
Air inlet system	Turbo
Cylinder configuration	6 - L
Displacement (l)	16,12
Bore (mm) x Stroke (mm)	144 x 165
Compression ratio	16.8 : 1
Speed 50Hz (RPM)	1500
Maximum stand-by power at rated RPM (kW)	565
Governor type	Electronic
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)	180
Max head on fuel return line (m fuel)	2
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)	130,3
Fuel consumption @ PRP Max Power (l/h)	116,7
Fuel consumption @ 75% of PRP Power (l/h)	88,9
Fuel consumption @ 50% of PRP Power (l/h)	59,9

Cooling system	
Radiator & Engine capacity (l)	60
Fan power 50Hz (kW)	9
Fan air flow w/o restriction (m3/s)	10
Available restriction on air flow (mm H2O)	30
Type of coolant	Glycol-Ethylene
Radiated heat to ambiant (kW)	20
Heat rejection to coolant HT (kW)	218
Coolant capacity HT, engine only (l)	33
Outlet coolant temperature (°C)	93
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)	96

Exhaust system	
Heat rejection to exhaust (kW)	427
Exhaust gas temperature @ ESP (°C)	482
Exhaust gas flow @ ESP (l/s)	1708
Electrical system	
Battery voltage (V)	24
Air Intake system	
Combustion air flow (l/s)	650
Radiated heat to ambiant (kW)	20

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

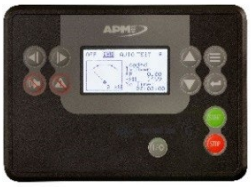
- All models are brushless, rotating-field alternators
- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting
- The AVR voltage regulator provides superior short circuit capability
- Self-ventilated and dip proof constructio
- Superior voltage waveform

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%.

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
- Separate 9 dB(A) silencer
- 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

Compact version	
Overall Size, max., L x W x H, (mm)	3620 x 1892 x 1993
Dry weight (kg)	4180
Tank capacity (L)	717

M240 - Dimensions soundproofed version	
Overall Size, max., L x W x H, (mm)	5320 x 2071 x 2658
Tank capacity (L)	717
Dry weight (kg)	5930
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	105
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	84
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	74

Dimensions DW compact version	
Overall Size, max., L x W x H, (mm)	5367 x 2153 x 2268
Tank capacity (L)	2420
Dry weight (kg)	5100

M240 - Dimensions DW soundproofed version	
Overall Size, max., L x W x H, (mm)	5367 x 2153 x 2933
Tank capacity (L)	2420
Dry weight (kg)	6810
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	105
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	84
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	74

** 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.