



RATINGS 400 V - 50 Hz		
Standby	kVA	650
	kWe	520
Prime	kVA	591
	kWe	473

Benefits & features

KOHLER 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

KOHLER 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 KOHLER
- 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

Engine brand	VOLVO
Alternator commercial brand	KOHLER
Voltage (V)	400/230
Standard Control Panel	APM403
Optional control panel	EasyGen 3200XT
Optional Control Panel	EasyGen 3500XT
Consumption @ 100% load ESP (L/h)	129
Consumption @ 100% load PRP (L/h)	116
Emission level	Emission optimization - Stage II
Type of Cooling	Mechanical driven fan
Performance class	G3

GENERATOR SETS RATINGS

	Voltage	PH	Hz	Standby Rating			Prime Rating	
				kWe	kVA	Amps	kWe	kVA
V650C2	415/240	3	50	520	650	904	473	591
	400/230	3	50	520	650	938	473	591
	380/220	3	50	520	650	988	473	591
	240 TRI	3	50	520	650	1564	473	591
	230 TRI	3	50	520	650	1632	473	591
	220 TRI	3	50	520	650	1706	473	591

DIMENSIONS COMPACT VERSION

Length (mm)	3470
Width (mm)	1630
Height (mm)	2095
Tank capacity (L)	610
Dry weight (kg)	3780

DIMENSIONS SOUNDPROOFED VERSION

Type soundproofing	NOT AVAILABLE
Length (mm)	5031
Width (mm)	1690
Height (mm)	2672
Tank capacity (L)	610
Dry weight (kg)	5300
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	80
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	70

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.

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.

Engine
General

Engine brand	VOLVO
Engine ref.	TAD1642GE-B *
Air inlet system	Turbo
Fuel	Diesel Fuel/HVO
Emission level	Emission optimization - Stage II Compliant
Cylinder configuration	L
Number of cylinders	6
Displacement (l)	16,12
Bore (mm) * Stroke (mm)	144 * 165
Compression ratio	17.0 : 1
Speed 50Hz (RPM)	1500
Maximum stand-by power at rated RPM (kW)	565
Charge Air coolant	Air/Air
Frequency regulation, steady state (%)	+/- 0.25%
Injection Type	Direct
Governor type	Electronic
Air cleaner type, models	Dry

Fuel system

Maximum fuel pump flow (l/h)	180
Max head on fuel return line (m fuel)	2
Maximum allowed inlet fuel temperature (°C)	60

Consumption with cooling system

Fuel consumption @ ESP Max Power (l/h)	130,30
Fuel consumption @ PRP Max Power (l/h)	116,70
Fuel consumption @ 75% of PRP Power (l/h)	88,90
Fuel consumption @ 50% of PRP Power (l/h)	59,90

Emissions

Emission PM (g/kW.h)	0,11
Emission CO (g/kW.h)	0,67
Emission NOx (g/kW.h)	5,42
Emission HC (g/kW.h)	0,25

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

Lubrication System

Oil system capacity including filters (l)	48
Min. oil pressure (bar)	2,20
Max. oil pressure (bar)	6,50
Oil sump capacity (l)	42
Oil consumption 100% ESP 50Hz (l/h)	0,11

Air Intake system

Max. intake restriction (mm H2O)	510
Combustion air flow (l/s)	650

Exhaust system

	PRP	ESP
Heat rejection to exhaust (kW)		427
Exhaust gas temperature (°C)	456	482
Exhaust gas flow (L/s)	1573	1708
Max. exhaust back pressure (mm H2O)	1010	

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 ambient (kW)	20
Heat rejection to coolant HT (kW)	218
HT circuit flow rate (l/min)	384
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)	86
Thermostat end of opening HT (°C)	96

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Alternator Specifications

Alternator commercial brand	KOHLER
Kohler Alternator description	KH02880TN4N
Number of pole	4
Number of bearing	Single Bearing
Technology	Brushless
Indication of protection	IP23
Insulation class	H
Number of wires	12
AVR Regulation	Yes
Coupling	Direct
Capacity for maintaining short circuit at 300% of rated current for 10 s	No

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
- 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.

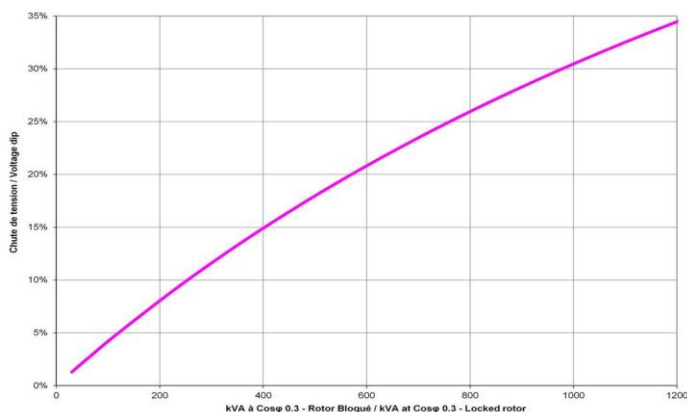
Application data

Overspeed (rpm)	2250
Power factor (Cos Phi)	0,80
Voltage regulation at established rating (+/- %)	0,50
Wave form : NEMA=TIF	<50
Wave form : CEI=FHT	<2
Total Harmonic Distortion in no-load DHT (%)	<2
Total Harmonic Distortion, on linear load DHT (%)	<2
Recovery time (Delta U = 20% transient) (ms)	500

Performance datas

Continuous Nominal Rating 40°C (kVA)	600
Unbalanced load acceptance ratio (%)	70

Peak motor starting (kVA) based on x% voltage dip power factor at 0.3



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Dimensions compact version

Length (mm) * Width (mm) * Height (mm)	3470 * 1630 * 2095
Dry weight (kg)	3780
Tank capacity (L)	610



M230 - Dimensions soundproofed version

Length (mm) * Width (mm) * Height (mm)	5031 * 1690 * 2672
Dry weight (kg)	5300
Tank capacity (L)	610
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	80
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	100
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	70



Dimensions DW compact version

Length (mm) * Width (mm) * Height (mm)	5083 * 1960 * 2355
Dry weight (kg)	4420
Tank capacity (L)	1950



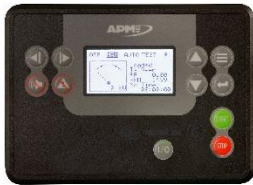
M230 - Dimensions DW soundproofed version

Length (mm) * Width (mm) * Height (mm)	5083 * 1690 * 2932
Dry weight (kg)	5910
Tank capacity (L)	1950
Acoustic pressure level @1m in dB(A) 50Hz (75% PRP)	80
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	100
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP)	70



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.

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APM403

BASIC GENERATING SET AND POWER PLANT CONTROL

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

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EasyGen 3200XT



The EasyGen-3200XT application range spans from isolated operation of a single genset to load sharing of up to 32 gen-sets in islanded and/or parallel operation with a single utility. It combines complete engine-generator control and protection with advanced, peer-to-peer paralleling functionality and innovative features in a robust, attractive, user-friendly and all-in-one package. Its integrated LogicsManager™ and AnalogManager™ pro-programmable logic functionalities provide outstanding application flexibility and can often eliminate the need of an additional PLC control, yet can easily integrate with SCADA or PLC-based control systems where desired.

- Three-phase true RMS power sensing with Class I accuracy
- Operation modes: AUTO, STOP, MANUAL, and TEST modes accessible through face plate or discrete input
- Breaker control: Slip frequency/phase matching synchronization, open/close control, breaker monitoring
- Load transfer: open/closed transition, interchange, soft loading/unloading, Utility parallel
- Load share and device to device communication over Ethernet or CAN (“warm redundancy” possible)
- Remote control via interface (Modbus TCP, Modbus RTU) and via discrete/analog inputs for adjusting speed, frequency, voltage, power, reactive power, and power factor set points
- Freely configurable PID controllers for various control purposes, such as heating circuit control (CHP applications), water level, fuel level, pressure and/or other process values
- Direct support to several ECUs: Scania S6, MTU ADEC ECU7/8, Volvo EMS2 & EDC4, Deutz EMR2 & EMR3, MAN MFR/EDC7, SISU EEM, Cummins and Woodward EGS02 ECU
- Field ECU support and additional I/O expansion board connectivity through sequencer files
- “System Update” function for online troubleshooting and adding / removing generator sets
- Time/Date synchronization over Simple Network Time Protocol (SNTP)
- Cylinder head/exhaust temperature monitoring (Temperatures come from J1939 or CANopen devices)
- Woodward ToolKit™ software for flexible setup from a single connection to the network. The ToolKit can be accessed either via USB, or via Ethernet, or via CAN port.
- Multi-lingual capability: English, German, Spanish, French, Italian, Portuguese, Japanese, Chinese, Russian, Turkish, Polish, Slovakian, Finnish, Swedish

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.

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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

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 Directive 2014/30/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%.

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TERMS OF USE

According to the standard, the nominal power assigned by the genset is given for 25°C Air Inlet Temperature, of a barometric pressure of 100 kPA (100 m A.S.L), and 30% relative humidity. For particular conditions in your installation, refer to the derating table.

WARRANTY INFORMATIONS

Standard Warranty Period:

- for Products in "back-up" service
 - o 30 months from the date the Product leaves the plant
 - o 24 months from the Product's commissioning date
 - o 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),
 - o 18 months from the date the Product leaves the plant
 - o 12 months from the Product's commissioning date
 - o 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".

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