

| RATINGS 400 V - 50 Hz | | |
|-----------------------|-----|-----|
| Standby | kVA | 440 |
| | kWe | 352 |
| Prime | kVA | 400 |
| | kWe | 320 |

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

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 | DOOSAN / HYUNDAI |
| Alternator commercial brand | KOHLER |
| Voltage (V) | 400/230 |
| Standard Control Panel | APM303 |
| Optional control panel | APM403 |
| Optional Control Panel | Terminal block |
| Optional control panel | M80 |
| Consumption @ 100% load ESP (L/h) * | 97 |
| Consumption @ 100% load PRP (L/h) * | 88 |
| Emission level | Fuel consumption optimization |
| Type of Cooling | Mechanical driven fan |
| Performance class | G3 |

GENERATOR SETS RATINGS

| | Voltage | PH | Hz | Standby Rating | | | Prime Rating | |
|------|---------|----|----|----------------|-----|------|--------------|-----|
| | | | | kWe | kVA | Amps | kWe | kVA |
| D440 | 415/240 | 3 | 50 | 352 | 440 | 612 | 320 | 400 |
| | 400/230 | 3 | 50 | 352 | 440 | 635 | 320 | 400 |
| | 380/220 | 3 | 50 | 352 | 440 | 669 | 320 | 400 |
| | 200/115 | 3 | 50 | 352 | 440 | 1270 | 320 | 400 |
| | 240 TRI | 3 | 50 | 352 | 440 | 1059 | 320 | 400 |
| | 230 TRI | 3 | 50 | 352 | 440 | 1105 | 320 | 400 |

DIMENSIONS COMPACT VERSION

| | |
|-------------------|------|
| Length (mm) | 3470 |
| Width (mm) | 1500 |
| Height (mm) | 1851 |
| Tank capacity (L) | 500 |
| Dry weight (kg) | 2951 |

DIMENSIONS SOUNDPROOFED VERSION

| | |
|---|------|
| Type soundproofing | M229 |
| Length (mm) | 5031 |
| Width (mm) | 1560 |
| Height (mm) | 2430 |
| Tank capacity (L) | 500 |
| Dry weight (kg) | 4133 |
| Acoustic pressure level @1m in dB(A) 50Hz (75% PRP) | 80 |
| Acoustic pressure level @7m in dB(A) 50Hz (75% PRP) | 69 |

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.

Engine

General

| | |
|--|-------------------------------|
| Engine brand | DOOSAN / HYUNDAI |
| Engine ref. | P158LE * |
| Air inlet system | Turbo |
| Fuel | Diesel Fuel |
| Emission level | Fuel consumption optimization |
| Cylinder configuration | V |
| Number of cylinders | 8 |
| Displacement (l) | 14.62 |
| Bore (mm) * Stroke (mm) | 128 * 142 |
| Compression ratio | 15 : 1 |
| Speed 50Hz (RPM) | 1500 |
| Maximum stand-by power at rated RPM (kW) | 414 |
| Piston type & material | Not defined |
| 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) | 270 |
| Max head on fuel return line (m fuel) | 1 |
| Fuel recommendation | UNKNOWN |

Consumption with cooling system

| | |
|---|--------|
| Fuel consumption @ ESP Max Power (l/h) | 102.90 |
| Fuel consumption @ PRP Max Power (l/h) | 89.30 |
| Fuel consumption @ 75% of PRP Power (l/h) | 65.20 |
| Fuel consumption @ 50% of PRP Power (l/h) | 43.90 |

Emissions

| | |
|-----------------------|--------|
| Emission PM (g/kW.h) | 0.0970 |
| Emission CO (g/kW.h) | 0.84 |
| Emission NOx (g/kW.h) | 10.03 |
| Emission HC (g/kW.h) | 0.18 |

* 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) | 31 |
| Min. oil pressure (bar) | 0.50 |
| Max. oil pressure (bar) | 10 |
| Oil sump capacity (l) | 21 |
| Oil consumption 100% ESP 50Hz (l/h) | 0.09 |

Air Intake system

| | |
|----------------------------------|-----|
| Max. intake restriction (mm H2O) | 635 |
| Combustion air flow (l/s) | 421 |

Exhaust system

| | PRP | ESP |
|-------------------------------------|------|------|
| Exhaust gas flow (L/s) | 1175 | 1305 |
| Exhaust gas temperature @ ESP (°C) | 580 | |
| Heat rejection to exhaust (kW) | 369 | |
| Max. exhaust back pressure (mm H2O) | 600 | |

Cooling system

| | |
|--|-----------------|
| Radiator & Engine capacity (l) | 80.50 |
| Fan power 50Hz (kW) | 16 |
| Fan air flow w/o restriction (m3/s) | 8.20 |
| Available restriction on air flow (mm H2O) | 14 |
| Type of coolant | Glycol-Ethylene |
| Radiated heat to ambient (kW) | 51 |
| Heat rejection to coolant HT (kW) | 222 |
| HT circuit flow rate (l/min) | 600 |
| Coolant capacity HT, engine only (l) | 20 |
| Max coolant temperature, Shutdown (°C) | 103 |
| Thermostat begin of opening HT (°C) | 71 |
| Thermostat end of opening HT (°C) | 85 |

Alternator Specifications

| | |
|---|----------------|
| Alternator commercial brand | KOHLER |
| Kohler Alternator description | KH01484T |
| 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 3 In for 10 s | Yes |

Application data

| | |
|---|------|
| Overspeed (rpm) | 2250 |
| Power factor (Cos Phi) | 0.80 |
| Voltage regulation at established rating (+/- %) | 0.50 |
| Wave form : NEMA=TIF | <40 |
| Wave form : CEI=FHT | <2 |
| Total Harmonic Distortion in no-load DHT (%) | 2.9 |
| Total Harmonic Distortion, on linear load DHT (%) | 2.6 |
| Recovery time (Delta U = 20% transient) (ms) | 200 |

Performance datas

| | |
|--------------------------------------|-----|
| Continuous Nominal Rating 40°C (kVA) | 400 |
| Unbalanced load acceptance ratio (%) | 8 |

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

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.

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Dimensions compact version

| | |
|--|--------------------|
| Length (mm) * Width (mm) * Height (mm) | 3470 * 1500 * 1851 |
| Dry weight (kg) | 2951 |
| Tank capacity (L) | 500 |

**M229 soundproofed version - Not compliant with 2000/14/CE noise emissions Directive****

| | |
|---|--------------------|
| Length (mm) * Width (mm) * Height (mm) | 5031 * 1560 * 2430 |
| Dry weight (kg) | 4133 |
| Tank capacity (L) | 500 |
| 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) | 69 |

**Dimensions DW compact version**

| | |
|--|--------------------|
| Length (mm) * Width (mm) * Height (mm) | 5083 * 1560 * 2111 |
| Dry weight (kg) | 3641 |
| Tank capacity (L) | 1770 |

**M229 DW soundproofed version - Not compliant with 2000/14/CE noise emissions Directive****

| | |
|---|--------------------|
| Length (mm) * Width (mm) * Height (mm) | 5083 * 1560 * 2690 |
| Dry weight (kg) | 4920 |
| Tank capacity (L) | 1770 |
| 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) | 69 |



* dimensions and weight without options

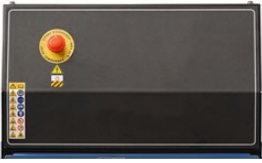
Not compliant with 2000/14/CE noise emissions Directive

Indoor use only in the European economic area, the United Kingdom, Iceland, Norway, and Liechtenstein.

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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



The M80 is a dual-function control panel. It can be used as a basic terminal block for connecting a control unit and as an instrument panel with a direct read facility, with displays giving a global view of your generating set's basic parameters. Offers the following functions:

- Engine parameters: tachometer, working hours counter, coolant temperature indicator, oil pressure indicator
- emergency stop button
- customer connection terminal block
- CE certified

APM303

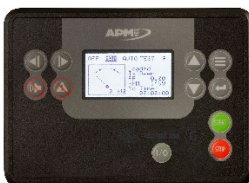


The APM303 is a versatile unit which can be operated in manual or automatic mode. It offers the following features:

- Measurements: phase-to-neutral and phase-to-phase voltages, fuel level (In option : active power currents, effective power, power factors, Kw/h energy meter, oil pressure and coolant temperature levels)
- Supervision: Modbus RTU communication on RS485
- Reports: (In option : 2 configurable reports)
- Safety features: Overspeed, oil pressure, coolant temperatures, minimum and maximum voltage, minimum and maximum frequency (Maximum active power P<66kVA)
- Traceability: Stack of 12 stored events

For further information, please refer to the data sheet for the APM303

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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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

Excluded from the supply:

- For XPRESS products, from 25 to 1500 kVA: 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%.

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.

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