

# KOHLER. Power Systems



## DESCRIPTIVE

- ➔ Kohler Co. Provides one-source responsibility for the generating system and accessories
- ➔ The generator set and its components are prototype-tested, factory-built, and production-tested
- ➔ A one-year limited warranty covers all systems and components
- ➔ Mechanic governor
- ➔ Mechanically welded chassis with antivibration suspension
- ➔ Main line circuit breaker
- ➔ Radiator for core temperature of 48/50°C max with mechanical fan
- ➔ Protective grille for fan and rotating parts (CE option)
- ➔ 9 dB(A) silencer supplied separately
- ➔ Charger DC starting battery with electrolyte
- ➔ 12 V charge alternator and starter
- ➔ Delivered with oil and coolant -30°C
- ➔ Manual for use and installation

## POWER DEFINITION

PRP : Prime Power is available for an unlimited number of annual operating hours in variable load applications, in accordance with ISO 8528-1. ESP : The standby power rating is applicable for supplying emergency power in variable load applications in accordance with ISO 8528-1. Overload is not allowed

## 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.

## ASSOCIATED UNCERTAINTY

For the generator sets used indoor, where the acoustic pressure levels depend on the installation conditions, it is not possible to specify the ambient noise level in the operating and maintenance instructions. You will also find in our operating and maintenance instructions a warning concerning the air noise dangers and the need to implement appropriate preventive measures.

## KD88

Engine type	4045TF220
Alternator type	KH00973T
Performance class	G3

## GENERAL CHARACTERISTICS

Frequency (Hz)	50
Voltage (V)	400/230
Standard control panel	APM303
Optional control panel	DEC4000
Optional control panel	M80

## POWER

Voltage	ESP		PRP		Standby Amps
	kWe	kVA	kWe	kVA	
415/240	70	88	64	80	122
400/230	70	88	64	80	127
380/220	69	86	62	78	131
200/115	70	88	64	80	254
240 TRI	70	88	64	80	212
230 TRI	70	88	64	80	221
220 TRI	70	88	64	80	231

## DIMENSIONS COMPACT VERSION

Length (mm)	1870
Width (mm)	994
Height (mm)	1360
Dry weight (kg)	1088
Tank capacity (L)	180

## DIMENSIONS SOUNDPROOFED VERSION

Commercial reference of the enclosure	M128
Length (mm)	2300
Width (mm)	1060
Height (mm)	1680
Dry weight (kg)	1508
Tank capacity (L)	180
Acoustic pressure level @1m in dB(A)	76
Sound power level guaranteed (Lwa)	94
Acoustic pressure level @7m in dB(A)	64

**GENERAL ENGINE DATA**

Engine model	JOHN DEERE
Engine type	4045TF220
Air inlet	Turbo
Cylinders arrangement	L
Number of cylinders	4
Displacement (L)	4.48
Air coolant	-
Bore (mm) x Stroke (mm)	106 x 127
Compression ratio	17 : 1
Speed (RPM)	1500
Pistons speed (m/s)	6.35
Maximum stand-by power at rated RPM (kW)	83
Frequency regulation, steady state (%) +/-	2.5%
BMEP (bar)	13.5
Governor type	Mechanical

**COOLING SYSTEM**

Radiator & Engine capacity (L)	23.6
Max water temperature (°C)	-
Outlet water temperature (°C)	-
Fan power (kW)	2.5
Fan air flow w/o restriction (m <sup>3</sup> /s)	3.37
Available restriction on air flow (mm H <sub>2</sub> O)	20
Type of coolant	Glycol-Ethylene
Thermostat modulating range HT (°C)	-

**EMISSIONS**

Emission PM (mg/Nm <sup>3</sup> ) 5% O <sub>2</sub>	60
Emission CO (mg/Nm <sup>3</sup> ) 5% O <sub>2</sub>	190
Emission HC+NO <sub>x</sub> (g/kWh)	-
Emission HC (mg/Nm <sup>3</sup> ) 5% O <sub>2</sub>	34

**EXHAUST**

Exhaust gas temperature @ ESP 50Hz (°C)	565
Exhaust gas flow @ ESP 50Hz (L/s)	205
Max. exhaust back pressure (mm H <sub>2</sub> O)	750

**FUEL**

Consumption @ 110% load (L/h)	21.5
Consumption @ 100% load (L/h)	19.5
Consumption @ 75% load (L/h)	14
Consumption @ 50% load (L/h)	10
Maximum fuel pump flow (L/h)	108

**OIL**

Oil capacity (L)	13.5
Min. oil pressure (bar)	1
Max. oil pressure (bar)	5
Oil consumption 100% load (L/h)	-
Oil sump capacity (L)	12.5

**HEAT BALANCE**

Heat rejection to exhaust (kW)	65
Radiated heat to ambient (kW)	10
Heat rejection to coolant (kW)	43

**AIR INTAKE**

Max. intake restriction (mm H <sub>2</sub> O)	625
Intake air flow (L/s)	93

#### GENERAL DATA

Alternator type	KH00973T
Number of Phase	Three phase
Power factor (Cos Phi)	0.8
Altitude (m)	0 to 1000
Overspeed (rpm)	2250
Number of pole	4
Capacity for maintaining short circuit at 3 In for 10 s	Yes
Insulation class	H
T° class (H/125°), continuous 40°C	H / 125°K
T° class, standby 27°C	H / 163°K
AVR Regulation	Yes
Total Harmonic Distortion in no-load DHT (%)	3.3
Total Harmonic Distortion, on load DHT (%)	3.9
Wave form : NEMA=TIF	<45
Wave form : CEI=FHT	<2
Number of bearing	1
Coupling	Direct
Voltage regulation at established rating (+/- %)	1
Recovery time (Delta U = 20% transient) (ms)	200
Protection class	IP 23
Technology	Without collar or brush

#### OTHER DATA

Continuous Nominal Rating 40°C (kVA)	80
Standby Rating 27°C (kVA)	87
Efficiencies 100% of load (%)	90.5
Air flow (m3/s)	0.2
Short circuit ratio (Kcc)	0.31
Direct axis synchro reactance unsaturated (Xd) (%)	329.6
Quadrature-axis synchro reactance unsaturated (Xq) (%)	129.5
Open circuit time constant (T'do) (ms)	1300
Direct axis transient reactance saturated (X'd) (%)	12.5
Short circuit transient time constant (T'd) (ms)	65
Direct axis subtransient reactance saturated (X''d) (%)	6.5
Subtransient time constant (T''d) (ms)	14
Quadrature-axis subtransient reactance saturated (X''q) (%)	32.1
Subtransient time constant (T''q) (ms)	18
Zero sequence reactance unsaturated (Xo) (%)	3.6
Negative sequence reactance saturated (X2) (%)	21.8
Armature time constant (Ta) (ms)	27
No load excitation current (io) (A)	0.6
Full load excitation current (ic) (A)	2.4
Full load excitation voltage (uc) (V)	27.2
Engine start (Delta U = 20% perm. or 50% trans.) (kVA)	230
Transient dip (4/4 load) - PF : 0,8 AR (%)	14.4
No load losses (W)	1420
Heat rejection (W)	6718
Unbalanced load acceptance ratio (%)	100

### DIMENSIONS

#### Dimensions soundproofed version

Commercial reference of the enclosure	M128
Length (mm)	2300
Width (mm)	1060
Height (mm)	1680
Dry weight (kg)	1508
Tank capacity (L)	180
Acoustic pressure level @1m in dB(A)	76
Sound power level guaranteed (Lwa)	94
Acoustic pressure level @7m in dB(A)	64

#### Dimensions DW soundproofed version

Commercial reference of the enclosure	M128 DW
Length (mm)	2344
Width (mm)	1060
Height (mm)	1900
Dry weight (kg)	1695
Tank capacity (L)	390
Acoustic pressure level @1m in dB(A)	76
Sound power level guaranteed (Lwa)	94
Acoustic pressure level @7m in dB(A)	64

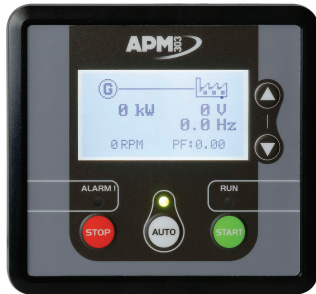
#### Dimensions DW compact version

Commercial reference of the enclosure	-
Length (mm)	2344
Width (mm)	1060
Height (mm)	1579
Dry weight (kg)	1362
Tank capacity (L)	390
Acoustic pressure level @1m in dB(A)	-
Sound power level guaranteed (Lwa)	-
Acoustic pressure level @7m in dB(A)	-

#### Dimensions DW 48h soundproofed version

Commercial reference of the enclosure	M128 DW48
Length (mm)	2344
Width (mm)	1060
Height (mm)	1989
Dry weight (kg)	1725
Tank capacity (L)	700
Acoustic pressure level @1m in dB(A)	76
Sound power level guaranteed (Lwa)	94
Acoustic pressure level @7m in dB(A)	64

### APM303, comprehensive and simple



The APM303 is a versatile unit which can be operated in manual or automatic mode. Equipped with an LCD screen, the user-friendly APM303 offers high-quality basic functions to guarantee simple, reliable operation and supervision of your generating set. It offers the following features:

**Measurements:**

phase-to-neutral and phase-to-phase voltages, active power currents, effective power, power factors, Kw/h energy meter

Fuel, oil pressure and coolant temperature levels

**Supervision:**

Modbus RTU communication on RS485

**Reports:**

2 configurable reports

**Safety features:**

Overspeed, oil pressure

Coolant temperatures

Minimum and maximum voltage

Minimum and maximum frequency

Maximum current

Maximum active power

Phase sequence

**Traceability:**

Stack of 12 stored events

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

### DEC4000, ergonomic and user-friendly



The highly versatile DEC4000 control unit is complex yet accessible, thanks to the particular attention paid to optimising its ergonomics and ease of use. With its large display screen, buttons and scroll wheel, it places the accent on simplicity and communication.

The DEC4000 offers the following functions:

**Electrical measurements:** voltmeter, frequency meter, ammeter.

**Engine parameters:** working hours counter, oil pressure, coolant temperature, fuel level, engine speed, battery voltage.

**Alarms and faults:** oil pressure, coolant temperature, failure to start, overspeed, alternator min./max., battery voltage min./max., emergency stop, fuel level.

**Ergonomics:** wheel for navigating around the various menus.

**Communication:** remote control and operation software, USB connections, PC connection.

For more information on the product and its options, please refer to the sales documentation.

**M80, transfer of information**



The M80 is a dual-function control unit. It can be used as a basic terminal block for connecting a control box 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.

**Basic terminal block**



The control unit can be used as a basic terminal block for connecting a control box.

Offers the following functions:

emergency stop button, customer connection terminal block, CE.