

Model: **KD220W**

**KOHLER** Power Systems

220-415V

Diesel



## Ratings Range

		<b>KD220W</b>
		<b>50HZ</b>
Standby : kW		176
	kVA	220
Prime : kW		163
	kVA	204

## Standard Features

- 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.
- John Deere engine with 12-volt battery charging alternator.
- KOHLER single-bearing alternator with insulation class H.
- Unit-mounted radiator with 50°C(122°F) ambient air capability.
- Skid and vibration isolators.
- Fuel Tank, 340 L (90 gal)
- Dry type air filter.
- Main line circuit breaker.
- Microprocessor controller.
- Battery, battery rack, and cables.
- Industrial 9 dB(A) reduction exhaust silencer (loose).
- Operation and installation literature.

## Generator Set Ratings

Alternator	V	PH	Hz	Standby Rating		Prime Rating	
				kW/kVA	Amps	kW/kVA	Amps
4S13X	220/380	3	50	176/220	334	160/200	304
	230/400	3	50	176/220	318	163/204	295
	240/415	3	50	176/220	306	163/204	284



**RATINGS:** All three-phase units are rated at 0.8 power factor. See TIB-109 for generator set derate tables. Obtain the technical information bulletin (TIB-101) on ratings guidelines for the complete ratings definitions.

**PRP:** Prime power is available for an unlimited number of annual operating hours in variable load applications in accordance with ISO-8528/1.

A 10% overload capability is available for a period of 1 hour within a 12-hour period of operating in accordance with ISO-3046-1.

**ESP:** The emergency standby power rating is applicable for supplying emergency power in variable load applications in accordance with ISO-8528/1. Overload in not allowed. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

## Alternator Data

- NEMA-MG21 PART32, ISO8528, IEEE Std-115, CSA standards compliance for temperature rise and motorstarting.
- Self-ventilated and dripproof construction.
- Vacuum-impregnated windings with fungus-resistant epoxyvarnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

Specifications	4S13X	50HZ
Ratings voltage		400V
Standby rating(27℃) , kVA		224
Standby rating(40℃) , kVA		215
Prime rating(40℃) , kVA		203.5
Efficiency (full load)		90.5
Air flow, ft <sup>3</sup> /min		1000
Direct axis subtransient reactance (X"d), Per-unit value		0.135

Specifications	4S13X	Alternator
Manufacturer		KOHLER
Type		4-Pole Rotating-Field
Exciter type		PMG, Brushless
Leads: quantity, type		12, Reconnectable
Voltage regulator		Solid State, Fast Response
Insulation:		NEMA MG1
-Material		Class H
Bearing: quantity, type		1, Sealed
Coupling		Direct
Voltage regulation, no-load to full-load		± 1%

## Application Data

Engine	
Engine Specification	50 Hz
Manufacturer	John Deere
Engine model	6068HFS77
Engine type	4-Cycle, Turbocharged, Aftercooled
Cylinder arrangement	6,L
Displacement, L (in3)	6.7 (410)
Bore and stroke, mm (in)	106 × 127 (4.17 × 5.0)
Compression ratio	17:1
Piston speed, m/min (ft/min)	381 (1248)
Rated rpm (r/min)	1500
Max. power at rated rpm, kW (BHP)	207 (278)
Valve material:	
Intake	Chromium-Silicon Steel
Exhaust	Stainless Steel
Governor type:	Isochronous
Frequency droop	0%
Air cleaner type, all models	Dry

Exhaust	
Exhaust System	50 Hz
Exhaust manifold type	Dry
Exhaust flow at rated kW, m3/min. (cfm)	31.5 (1113)
Exhaust temperature at rated kW, dry exhaust, °C(°F)	567 (1053)
Maximum allowable back pressure, kPa (in Hg)	7.5 (2.2)
Exhaust outlet size at engine hookup, mm(in)	115 (4.53)

Engine Electrical	
Engine Electrical System	50 Hz
Battery charging alternator:	
Ground(negative/positive)	Negative
Volts (DC)	12V
Starter motor rated voltage (DC)	12V
Battery, recommended cold cranking Amps (CCA):	
Quantity, CCA rating each	1, 760
Battery voltage (DC)	12V

Fuel	
Fuel System	50 Hz
Max. fuel flow, Lph (gph)	181 (48)
Fuel prime pump	Manual
Recommended fuel	#2 Diesel
Fuel tank Capacity, L(qal)	340 (89.8)

Lubricating	
Lubricating System	50 Hz
Type	Full Pressure
Oil pan capacity, L(qt)	32 (34)
Oil pan capacity with filter, L (qt)	33.0 (34.8)

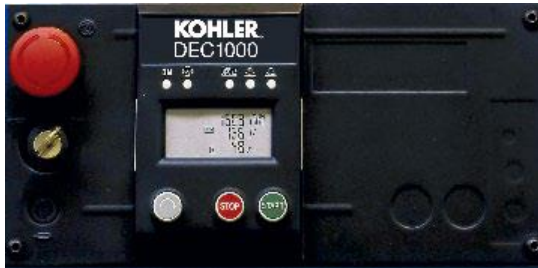
Cooling	
Radiator System	50 Hz
Ambient temperature, °C (°F)	50 (122)
Radiator system capacity, including engine, L (gal)	30 (7.9)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min)	108 (6148)
Water pump type	Centrifugal
Fan , kW (Hp)	3.4 (4.6)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in H2O)	0.2(0.8)

## Application Data

### Operation Requirements

Air Requirements	50 Hz
Radiator-cooled cooling air, m <sup>3</sup> /min (scfm)	306 (10807)
Combustion air, m <sup>3</sup> /min (ft <sup>3</sup> /min) - Air density = 1.20 kg/m <sup>3</sup> (0.075 lb/ft <sup>3</sup> )	11.8 (417)
Fuel Consumption	50 Hz
Diesel, Lph (gph) at % load	
100% (Standby)	50 (13.2)
Diesel, Lph (gph) at % load	
100% (Prime)	45 (11.9)
75%	34.1 (9)
50%	23.1 (6.1)

## Controller



### Decision-Maker™ 1000

#### Automation

- Test LEDs
- Voltage and speed stabilization

#### Engine Parameters

- Engine speed indication (with LCD message)
- Battery voltage indication (with LCD message)
- Elapsed hour meter (with LCD message)
- Fuel solenoid control
- Starter control

#### Measurements

- Frequency, Hz (with LCD message)

#### Operation and/or Safety Lights

- Oil pressure fault
- Water temperature fault
- Fail to start fault
- Overspeed fault (>60 kVA)
- Set ready for load
- Charging alternator fault
- General alarm
- General fault
- Panel lamp
- Emergency stop fault

#### Safety Devices

- Overspeed fault
- Automatic standby

#### Miscellaneous

- Fault reset
- Three-phase with or without neutral, two-phase, or single-phase use



### Decision-Maker™ 4000

#### Standard Features

- Large LCD display panel
- Unique control wheel for system access
- User buttons for start, stop, menu, and escape
- Emergency stop button
- On/off key switch
- Panel-mounted battery fuse
- Panel-mounted USB ports for PC access and software upgrades
- Password-protected access to control parameters
- Upgradeable software for future enhancements
- Easy upgrade from Decision-Maker 1000

#### LCD Panel Features

- 600 x 800 resolution
- Multiple lines of text or graphic display
- Icons for quick identification of system status
- Six languages: Chinese, English, French, German, Portuguese, and Spanish

#### Communication Features

- Engine communication via CANbus
- Modbus communication via RS-485 or ethernet
- PC and flash drive connections via USB

#### Functions

- View and adjust system operation parameters
- View system faults

#### Viewable/Selectable Parameters (may require optional module)

- Voltage: phase-to-neutral, total voltage
- Current
- Frequency
- Power (active/reactive/apparent)
- Power factor
- Engine speed
- Oil pressure
- Coolant temperature
- Battery voltage
- Fuel level (%)
- Time delays

#### Viewable Faults (over 60 individual faults are monitored) including:

- Alternator protection (if equipped)
- Circuit breaker and ground fault protection
- Communication and engine ECM monitoring
- Cooling air monitoring
- Electrical charging system
- Engine cooling system
- Engine lube system
- Fuel system
- Generator set status

# KOHLER® Power Systems

## Enclosed Unit

- ☐ Sound Enclosure M226, 50 Hz, 68.6 dB(A) @ 7 m (23 ft.), Standby (with enclosed critical silencer)

## Open Unit

- ☐ Exhaust Silencer, Critical 40 dB(A) Reduction
- ☐ Exhaust Silencer, Residential 29 dB(A) Reduction
- ☐ Flexible Exhaust Connector
- ☐ Protection Mesh for Exhaust Parts

## Cooling System

- ☐ Block Heater  
[recommended for ambient temperatures below 0°C (32°F)]
- ☐ Radiator Core Guard

## Decision-Maker™ 1000 Controller

- ☐ Alarm Horn
- ☐ Analog Indicator
- ☐ Differential Protection with Time and Sensitivity Adjustment
- ☐ Differential Triggering Fault
- ☐ External ATS Position
- ☐ External Starting Order
- ☐ Line Voltages, Volts Indicator
- ☐ Overload or Short-Circuit Fault
- ☐ Permanent Insulation Controller
- ☐ Phase Currents, Amps Indicator
- ☐ Plug Preheating
- ☐ Plug Preheating Control
- ☐ Remote Start Capability
- ☐ Single Voltages, Volts Indicator
- ☐ Utility Sensing, 3-Phase
- ☐ Water Preheating Control

## Decision-Maker™ 4000 Controller

- ☐ Alternator Protection
- ☐ Audible Alarm Module
- ☐ Five Expandable Modules with Four Inputs/Six Outputs Each
- ☐ Network Modules (RTC and GSM modems and ethernet router)
- ☐ NFPA-110 Module
- ☐ Remote Annunciator
- ☐ Voltage/Speed Adjustment Module
- ☐ WinTelys Software

## Fuel System

- ☐ Automatic Fuel Tank Fill Kit
- ☐ Subbase Fuel Tank with Secondary Containment Basin
- ☐ Subbase Fuel Tank Leak Alarm
- ☐ Water Separator Fuel Filter

## Electrical System

- ☐ Battery Charger, Equalize/Float Type
- ☐ Battery Isolator Switch

## Engine and Alternator

- ☐ Alternator Strip Heater
- ☐ Air Cleaner, Heavy Duty (with air restriction indicator)
- ☐ Droop Kit with 3-Function Voltage Regulator
- ☐ Lube Oil Drain Pump
- ☐ PMG Alternator and Voltage Regulator
- ☐ Tropical Heavy-Duty Alternator Insulation

## Miscellaneous Accessories

- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_

## Dimensions and Weights

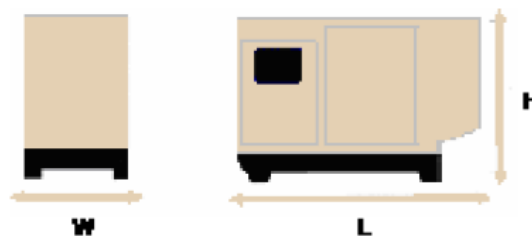
### Open Model



Overall Size, L×W×H mm (in): 2420×1114×1480 (95×44×58)

Weight, wet, kg (lb.): 2053 (4526)

### With Available Enclosure Accessory



Overall Size, L×W×H mm (in): 3508×1200×1830 (138×47×72)

Weight, wet, kg (lb.): 2663 (5871)

NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

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