KOHLER

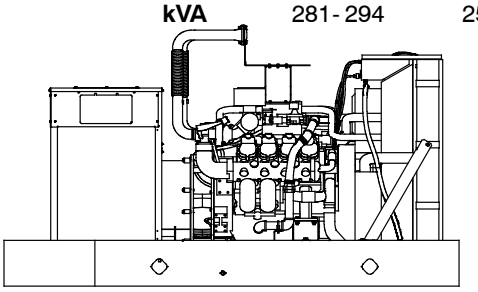
Model: 250RZXB

190- 600 V **Gas**

ISO 9001 KOHLER NATIONALLY REGISTERED

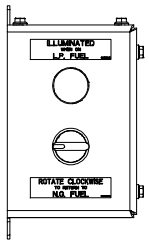
Ratings Range

		60 Hz	50 Hz
Standby:	**kW**	170- 260	148- 224
	kVA	213- 325	185- 280
Prime:	**kW**	225- 235	200
	kVA	281- 294	250



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.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A one-year limited warranty covers all generator set systems and components. Two- and five-year extended limited warranties are also available.
- Alternator features:
  - The unique Fast-Response® II excitation system delivers excellent voltage response and short-circuit capability using a permanent magnet (PM)-excited alternator.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Dual fuel model features:
  - Natural gas is the primary fuel. Automatically transfers back to primary fuel when LPG fuel becomes low or generator stops and restarts.
  - The patent pending reset box on the generator provides the ability to manually transfer back to natural gas.
  - The natural gas rating is available when running on natural gas.
  - APM603 controller provides load shed for automatic derate to LPG ratings to prevent an overload condition.



Dual Fuel Reset Box

Generator Set Ratings

				Rich-Burn Natural Gas				Rich-Burn LP Gas (Vapor)	
				130°C Rise Standby Rating		105°C Rise Prime Rating		130°C Rise Standby Rating	
Alternator	**Voltage**	**Ph**	**Hz**	**kW/kVA**	**Amps**	**kW/kVA**	**Amps**	**kW/kVA**	**Amps**
4UA10	120/208	3	60	260/325	902	230/288	798	170/213	590
	127/220	3	60	260/325	853	230/288	754	170/213	558
	120/240	3	60	260/325	782	230/288	692	170/213	511
	139/240	3	60	260/325	782	230/288	692	170/213	511
	220/380	3	60	250/313	475	225/281	427	170/213	323
	240/416	3	60	260/325	451	230/288	399	170/213	295
	277/480	3	60	260/325	391	230/288	346	170/213	256
	347/600	3	60	260/325	313	230/288	277	170/213	204
	110/190	3	50	220/275	836	200/250	760	148/185	562
	115/200	3	50	220/275	794	200/250	722	148/185	534
	120/208	3	50	220/275	763	200/250	694	148/185	514
	110/220	3	50	220/275	722	200/250	656	148/185	485
	220/380	3	50	220/275	418	200/250	380	148/185	281
	230/400	3	50	220/275	397	200/250	361	148/185	267
	240/416	3	50	220/275	382	200/250	347	148/185	257

Generator Set Ratings, Continued

				Rich-Burn Natural Gas				Rich-Burn LP Gas (Vapor)	
				130°C Rise Standby Rating		105°C Rise Prime Rating		130°C Rise Standby Rating	
Alternator	**Voltage**	**Ph**	**Hz**	**kW/kVA**	**Amps**	**kW/kVA**	**Amps**	**kW/kVA**	**Amps**
4UA13	120/208	3	60	260/325	902	235/294	815	170/213	590
	127/220	3	60	260/325	853	235/294	771	170/213	558
	120/240	3	60	260/325	782	235/294	707	170/213	511
	120/240	1	60	230/230	958	209/209	871	170/170	708
	139/240	3	60	260/325	782	235/294	707	170/213	511
	220/380	3	60	260/325	494	235/294	446	170/213	323
	277/480	3	60	260/325	391	235/294	353	170/213	256
	240/416	3	60	260/325	451	235/294	408	170/213	295
	347/600	3	60	260/325	313	235/294	283	170/213	204
	110/190	3	50	224/280	851	200/250	760	148/185	562
	115/200	3	50	224/280	808	200/250	722	148/185	534
	120/208	3	50	224/280	777	200/250	694	148/185	514
	220/380	3	50	224/280	425	200/250	380	148/185	281
	110/220	3	50	224/280	735	200/250	656	148/185	485
	230/400	3	50	224/280	404	200/250	361	148/185	267
	240/416	3	50	224/280	389	200/250	347	148/185	257

RATINGS: All three-phase units are rated at 0.8 power factor. *Standby Ratings:* The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. *Prime Power Ratings:* At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time and continuous ratings, consult the factory. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. For dual fuel engines, use the LP gas ratings for both the primary and secondary fuels.

Alternator Specifications

Specifications	**Alternator**
Manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet
Leads: quantity, type	12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	Controller Dependent
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)
480 V, 380 V 4UA10	790 (60Hz), 540 (50Hz)
480 V, 380 V 4UA13	980 (60Hz), 600 (50Hz)

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Windings are vacuum-impregnated with epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Fast-Response® II brushless alternator with brushless exciter for excellent load response.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	Doosan	
Engine model	D146L	
Engine type	14.6 L, 4-Cycle, Turbocharged, Aftercooled	
Cylinder arrangement	V-8	
Displacement, L (cu. in.)	14.6 (892)	
Bore and stroke, mm (in.)	128 x 142 (5.04 x 5.59)	
Compression ratio	10.5:1	
Piston speed, m/min. (ft./min.)	511 (1677)	426 (1398)
Main bearings: quantity, type	10, Precision Half-Shell	
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	300 (402)	253 (339)
Cylinder head material	Cast Iron	
Piston: type, material	—	
Crankshaft material	Forged Steel	
Valve material	—	
Governor: type, make/model	Electronic	
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	±0.5%	
Frequency	Fixed	
Air cleaner type, all models	Dry	

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust manifold type	Wet	
Exhaust flow at rated kW, kg/hr. (cfm)	1131 (1611)	952 (1357)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	600 (1112)	
Maximum allowable back pressure, kPa (in. Hg)	10.2 (3)	
Engine exhaust outlet size, mm (in.)	see ADV drawing	

Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:		
Ground (negative/positive)	Negative	
Volts (DC)	24	
Ampere rating	45	
Starter motor rated voltage (DC)	24	
Battery, recommended cold cranking amps (CCA):		
Qty., CCA rating each	Two, 1000	
Battery voltage (DC)	12	

Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil filter: quantity, type §	2, Cartridge	
Oil cooler	Water-Cooled	

§ Kohler recommends the use of Kohler Genuine oil and filters.

Fuel

Fuel System	60 Hz	50 Hz
Fuel type	Natural Gas, LP Gas, or Dual Fuel	
Fuel supply line inlet	2.0 NPTF	
Natural gas fuel supply pressure, kPa (in. H_2O)	1.74- 2.74 (7.0- 11.0)	
LPG vapor withdrawal fuel supply pressure, kPa (in. H_2O)	1.24- 2.74 (5.0- 11.0)	
Dual fuel engine, LPG vapor withdrawal fuel supply pressure, kPa (in. H_2O)	1.24 (5.0)	

Fuel supply pressure, measured at the generator set fuel inlet downstream of any fuel system equipment accessories.

Fuel Composition Limits *	Nat. Gas	LP Gas
Methane, % by volume	90 min.	—
Ethane, % by volume	4.0 max.	—
Propane, % by volume	1.0 max.	85 min.
Propene, % by volume	0.1 max.	5.0 max.
C_4 and higher, % by volume	0.3 max.	2.5 max.
Sulfur, ppm mass	25 max.	
Lower heating value, MJ/m^3 (Btu/ft^3), min.	33.2 (890)	84.2 (2260)

* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local distributor for further analysis and advice.

Oil pan capacity, L (qt.) §	31 (32.8)	
Oil pan capacity with filter, L (qt.) §	38.1 (40.3)	

Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F) *	50 (122)	
Engine jacket water capacity, L (gal.)	43.2 (9.5)	
Radiator system capacity, including engine, L (gal.)	227.3 (50)	
Engine jacket water flow, Lpm (gpm)	680 (180)	570 (151)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	284 (16189)	230 (13094)
Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)	35 (2000)	29 (1670)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	1143 (45)	
Fan, kWm (HP)	16 (22)	9.7 (13)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H_2O)	0.125 (0.5)	

* Weather and sound enclosures with internal silencer reduce ambient temperature capability by 5°C (9°F).

Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m^3/min. (scfm)†	638 (22500)	547 (19290)
Combustion air, kg/hr. (cfm)	1064 (532)	896 (448)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	66 (3765)	55 (3138)
Alternator, kW (Btu/min.)	23 (1309)	20 (1138)

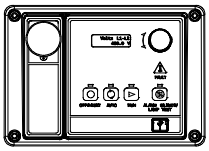
† Air density = 1.20 kg/m^3 (0.075 lbm/ft^3)

Fuel Consumption ‡	60 Hz	50 Hz
Natural Gas, m^3/hr. (cfh) at % load	**Standby Rating**	
100%	78.8 (2782)	70.4 (2485)
75%	61.4 (2168)	53.8 (1901)
50%	43.1 (1521)	37.1 (1309)
25%	26.3 (928)	22.5 (793)
Natural Gas, m^3/hr. (cfh) at % load	**Prime Rating**	
100%	71.8 (2536)	63.8 (2253)
75%	55.9 (1974)	48.8 (1723)
50%	39.7 (1402)	34.2 (1208)
25%	24.8 (876)	21.6 (763)
LP Gas, m^3/hr. (cfh) at % load	**Standby Rating**	
100%	26.2 (926)	22.1 (780)
75%	22.4 (789)	17.2 (606)
50%	15.1 (532)	12.8 (451)
25%	9.5 (335)	7.9 (279)

‡ Nominal fuel rating: Natural gas, 37 MJ/m^3 (1000 Btu/$ft.^3$)
LP vapor, 93 MJ/m^3 (2500 Btu/$ft.^3$)

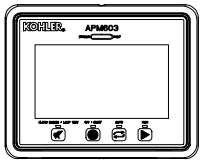
LP vapor conversion factors:
8.58 $ft.^3$ = 1 lb.
0.535 m^3 = 1 kg.
36.39 $ft.^3$ = 1 gal.

Controllers



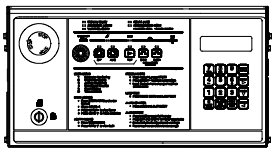
APM402 Controller
Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.
- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus® protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-161 for additional controller features and accessories.



APM603 Controller
Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.
- 7-inch graphic display with touch screen and menu control provides easy local data access
- Measurements are selectable in metric or English units
- Paralleling capability to control up to 8 generators on an isolated bus with first-on logic, synchronizer, kW and kVAR load sharing, and protective relays
  Note: Parallel with other APM603 controllers only
- Generator management to turn paralleled generators off and on as required by load demand
- Load management to connect and disconnect loads as required
- Controller supports Modbus® RTU, Modbus® TCP, SNMP and BACnet®
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- UL-listed overcurrent protective device
- NFPA 110 Level 1 capability

Refer to G6-162 for additional controller features and accessories.



Decision-Maker® 6000 Paralleling Controller
Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities for paralleling multiple generator sets.
- Paralleling capability to control up to 8 generators on an isolated bus with first-on logic, synchronizer, kW and kVAR load sharing, and protective relays
  Note: Parallel with other Decision-Maker® 6000 controllers only
- Digital display and keypad provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Controller supports Modbus® protocol
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-107 for additional controller features and accessories.

Standard Features

- Alternator Protection
- Battery Rack and Cables
- Closed Crankcase Ventilation (CCV) with Filters
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Low Coolant Level Shutdown
- Oil Drain Extension
- Operation and Installation Literature
- Dual Fuel Reset Box (standard on dual fuel models)

Available Options

Circuit Breakers

Type

- ❑ Magnetic Trip
- ❑ Thermal Magnetic Trip
- ❑ Electronic Trip (LI)
- ❑ Electronic Trip with Short Time (LSI)
- ❑ Electronic Trip with Ground Fault (LSIG)

Rating

- ❑ 80%
- ❑ 100%

Operation

- ❑ Manual
- ❑ Manual with Shunt Trip
- ❑ Electrically Operated (for paralleling)

Circuit Breaker Mounting

- ❑ Generator Mounted
- ❑ Remote Mounted
- ❑ Bus Bar (for remote mounted breakers)

Enclosed Remote Mounted Circuit Breakers

- ❑ NEMA 1 (15- 5000 A)
- ❑ NEMA 3R (15- 1200 A)

Approvals and Listings

- ❑ CSA Certified
- ❑ UL 2200 Listing

Enclosed Unit

- ❑ Sound Enclosure with Internal Silencer (Aluminum)
- ❑ Sound Enclosure with Internal Silencer (Steel)
- ❑ Weather Enclosure with Internal Silencer (Steel)

Open Unit

- ❑ Exhaust Silencer, Critical
- ❑ Flexible Exhaust Connector, Stainless Steel

Fuel System

- ❑ Dual Fuel NG/LPG (Automatic Changeover)
- ❑ Flexible Fuel Lines (required when the generator set skid is spring mounted)
- ❑ Gas Filter
- ❑ Secondary Gas Solenoid Valve

Controller

- ❑ Common Failure Relay
- ❑ Communications Products and PC Software
- ❑ Decision-Maker® Paralleling System (DPS) (Decision-Maker® 6000 controller only)
- ❑ Dry Contact Kit (isolated alarm) (Decision-Maker® 6000 controller only)
- ❑ Two Input/Five Output Module (APM402 controller only)
- ❑ Four Input/Fifteen Output Module (APM603 controller only)
- ❑ Prime Power Switch (Decision-Maker® 6000 controllers only)
- ❑ Remote Audiovisual Alarm Panel (Decision-Maker® 6000 controllers only)
- ❑ Remote Emergency Stop
- ❑ Remote Serial Annunciator Panel
- ❑ Run Relay (standard with APM603 controller)
- ❑ Manual Key Switch (APM603 controller only)
- ❑ Manual Speed Adjust (APM402 controller only)

Cooling System

- ❑ Block Heater; 2500 W, 120 V, 1 Ph
- ❑ Block Heater; 6000 W, 208 V, 1 Ph
- ❑ Block Heater; 6000 W, 240 V, 1 Ph or 3 Ph
- ❑ Block Heater; 6000 W, 480 V, 1 Ph Recommended for ambient temperatures below 10°C (50°F)
- ❑ Radiator Duct Flange

Electrical System

- ❑ Generator Heater
- ❑ Battery
- ❑ Battery Charger
- ❑ Battery Heater

Miscellaneous

- ❑ Air Cleaner Restriction Indicator
- ❑ Certified Test Report
- ❑ Engine Fluids Added
- ❑ Rodent Guards
- ❑ Rated Power Factor Testing

Literature

- ❑ General Maintenance
- ❑ NFPA 110
- ❑ Overhaul
- ❑ Production

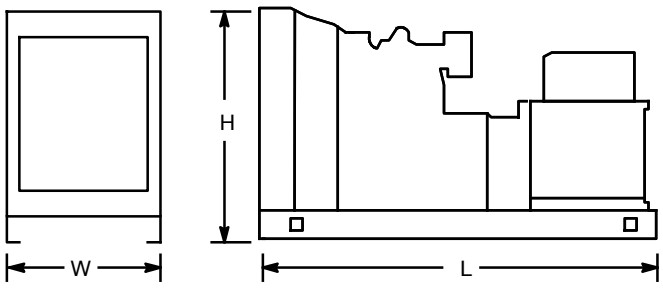
Warranty

- ❑ 2-Year Basic Limited Warranty
- ❑ 2-Year Prime Limited Warranty
- ❑ 5-Year Basic Limited Warranty
- ❑ 5-Year Comprehensive Limited Warranty

KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
KOHLERPower.com

Dimensions and Weights

Overall Size, L x W x H, max., mm (in.):	3500 x 1750 x 2148 (137.8 x 68.9 x 84.6)
Weight (radiator model), wet, max., kg (lb.):	3200 (7055)



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

DISTRIBUTED BY: