

Model: **100ERESD**

**KOHLER** POWER SYSTEMS

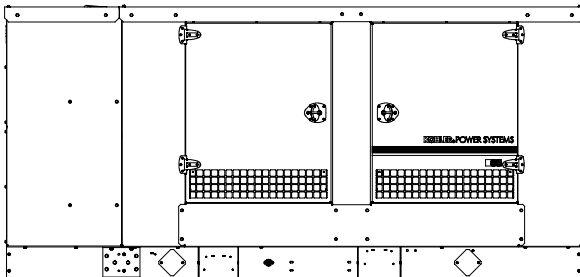
208-480 V

Gas



## Ratings Range

Standby:	kW	60 Hz 77-100
	kVA	77-125



## 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.
- UL 2200 listing is available. (60 Hz only)
- The generator set accepts rated load in one step.
- The 60 Hz generator set engine is certified by the Environmental Protection Agency (EPA) to conform to the New Source Performance Standard (NSPS) for stationary spark-ignited emissions.
- A one-year limited warranty covers all systems and components. Two- and five-year extended warranties are also available.
- Alternator features:
  - The unique Fast-Response™ X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth permanent magnet (PM)-excited alternator.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
  - Controllers are available for all applications. See controller features inside.
  - The electronic, isochronous governor incorporates an integrated drive-by-wire throttle body actuator delivering precise frequency regulation.

## Generator Set Ratings

Alternator	Voltage	Ph	Hz	Natural Gas 130°C Rise Standby Rating		LP Gas 130°C Rise Standby Rating	
				kW/kVA	Amps	kW/kVA	Amps
4R9X	120/208	3	60	98/123	340	80/100	278
	127/220	3	60	98/123	321	80/100	262
	120/240	3	60	98/123	295	80/100	241
	120/240	1	60	77/77	321	77/77	321
	139/240	3	60	98/123	295	80/100	241
	220/380	3	60	98/123	186	80/100	152
4R12X	277/480	3	60	98/123	147	80/100	120
	120/208	3	60	100/125	347	81/101	281
	127/220	3	60	100/125	328	81/101	266
	120/240	3	60	100/125	301	81/101	244
	120/240	1	60	91/91	379	81/81	338
	139/240	3	60	100/125	301	81/101	244
4T13X	220/380	3	60	100/125	190	81/101	154
	277/480	3	60	100/125	150	81/101	122
4T13X	120/240	1	60	100/100	417	80/80	333

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. *Standby Ratings:* Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-8528- and ISO-3046-1. For limited running time and base load ratings, consult the factory. Obtain the technical information bulletin (TIB-101) on ratings guidelines for the complete ratings definitions. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. GENERAL GUIDELINES FOR DERATING: *Altitude:* Derate 1.3% per 100 m (328 ft.) elevation above 200 m (656 ft.). *Temperature:* Derate 6.0% per 10°C (18°F) temperature above 25°C (77°F). For units having enclosures with enclosed silencers, add 10°C (18°F) to the ambient temperature. For dual fuel engines, use the natural gas ratings for both the primary and secondary fuels.

# Alternator Specifications

Specifications	Alternator
Manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Rare-Earth Permanent- Magnet
Leads: quantity, type	
4RX	12, Reconnectable
4TX	4, 120/240
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
Unbalanced load capability	100% of Rated Standby Current
One-step load acceptance	100% of Rating
Peak motor starting kVA:	(35% dip for voltages below)
480 V      4R9X (12 lead)	385 (60 Hz)
480 V      4R12X (12 lead)	448 (60 Hz)
240 V      4T13X (4 lead)	440 (60 Hz)

- 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.
- Vacuum-impregnated windings with fungus-resistant epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

## Application Data

### Engine

Engine Specifications	
Manufacturer	General Motors
Engine: model, type	Industrial Powertrain Vortec 5.7 L, 4-Cycle Turbocharged
Cylinder arrangement	V-8
Displacement, L (cu. in.)	5.7 (350)
Bore and stroke, mm (in.)	101.6 x 88.4 (4.00 x 3.48)
Compression ratio	9.1:1
Piston speed, m/min. (ft./min.)	318 (1044)
Main bearings: quantity, type	5, M400 Copper lead
Rated rpm	1800
Max. power at rated rpm, kW (HP)	121 (162)
Cylinder head material	Cast Iron
Piston type and material	Strutless Flat Top, Hypereutectic Cast Alum.
Crankshaft material	Cast Nodular Undercut Rolled Fillet
Valve (exhaust) material	Int.-A193 Exh. Inconel
Governor type	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	
Exhaust manifold type	Dry
Exhaust flow at rated kW, m³/min. (cfm)	24.8 (876)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	677 (1250)
Maximum allowable back pressure, kPa (in. Hg)	10.2 (3.0)
Exhaust outlet size at engine hookup, mm (in.)	See ADV drawing

### Engine Electrical

Engine Electrical System	
Ignition system	Individual Coil Near Plug Ignition
Battery charging alternator:	
Ground (negative/positive)	Negative
Volts (DC)	12
Ampere rating	70
Starter motor rated voltage (DC)	12
Battery, recommended cold cranking amps (CCA):	
Qty., rating for -18°C (0°F)	One, 630
Battery voltage (DC)	12

### Fuel

Fuel System	
Fuel type	Natural Gas, LP Gas, or Dual Fuel
Fuel supply line inlet	1 1/4 NPT
Natural gas fuel supply pressure, kPa (in. H <sub>2</sub> O)	1.74-2.74 (7-11)
LPG vapor withdrawal fuel supply pressure, kPa (in. H <sub>2</sub> O)	1.24-2.74 (5-11)
Dual fuel engine, LPG vapor withdrawal fuel supply pressure, kPa (in. H <sub>2</sub> O)	1.24 (5)

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 <sub>4</sub> and higher, % by volume	0.3 max.	2.5 max.
Sulfur, ppm mass	25 max.	
Lower heating value, MJ/m³ (Btu/ft³), 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.

# Application Data

## Lubrication

Lubricating System	
Type	Full Pressure
Oil pan capacity, L (qt.)	4.7 (5.0)
Oil pan capacity with filter, L (qt.)	6.2 (6.5)
Oil filter: quantity, type	1, Cartridge

## Cooling

Radiator System	
Ambient temperature, °C (°F) *	40 (104)
Engine jacket water capacity, L (gal.)	6.8 (1.8)
Radiator system capacity, including engine, L (gal.)	22.5 (6.0)
Engine jacket water flow, Lpm (gpm)	144 (38)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	72 (4100)
Heat rejected to charge air cooling at rated kW, dry exhaust, kW (Btu/min.)	10.5 (600)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	660 (26)
Fan, kWm (HP)	10.4 (14)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H <sub>2</sub> O)	0.125 (0.5)

## Operation Requirements

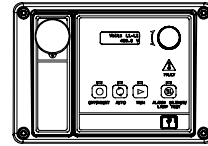
Air Requirements	
Radiator-cooled cooling air, m <sup>3</sup> /min. (scfm) †	198 (7000)
Combustion air, m <sup>3</sup> /min. (cfm)	8.4 (298)
Heat rejected to ambient air:	
Engine, kW (Btu/min.)	57.4 (3265)
Alternator, kW (Btu/min.)	13.7 (780)
† Air density = 1.20 kg/m <sup>3</sup> (0.075 lbm/ft <sup>3</sup> )	

Fuel Consumption‡	Standby Rating
Natural Gas, m <sup>3</sup> /hr. (cfh) at % load	
100%	39.3 (1389)
75%	32.1 (1134)
50%	24.9 (879)
25%	17.7 (624)
0%	10.4 (369)
LP Gas, m <sup>3</sup> /hr. (cfh) at % load	
100%	13.2 (466)
75%	10.8 (382)
50%	8.4 (298)
25%	6.1 (214)
0%	3.7 (130)

‡ Nominal fuel rating: Natural gas, 37 MJ/m<sup>3</sup> (1000 Btu/ft<sup>3</sup>)  
LP Vapor, 93 MJ/m<sup>3</sup> (2500 Btu/ft<sup>3</sup>)

LP vapor conversion factors:  
8.58 ft.<sup>3</sup> = 1 lb.  
0.535 m<sup>3</sup> = 1 kg.  
36.39 ft.<sup>3</sup> = 1 gal.

## Controllers

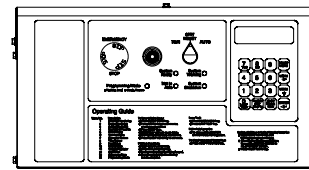


### Decision-Maker® 3000 Controller

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 through a PC via network or serial configuration
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection

Refer to G6-100 for additional controller features and accessories.



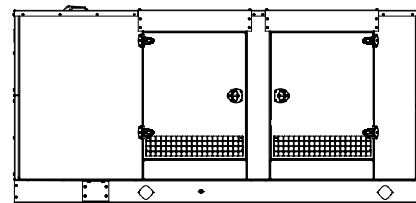
### Decision-Maker® 550 Controller

Provides advanced control, system monitoring, and system diagnostics with remote monitoring capabilities.

- 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

Refer to G6-46 for additional controller features and accessories.

## Sound Enclosure



- Sound level at 7 m (23 ft.) with full load: 71 dB(A)
- Sound attenuating enclosure uses acoustic insulation that meets UL 94 HF1 flammability classification and repels moisture absorption.
- Vertical air inlet and outlet discharge with 90 degree bends to redirect air and reduce noise.
- Internal-mounted critical silencer and flexible exhaust connector.
- Skid-mounted, steel (standard) or aluminum (optional) construction with hinged doors.
- Fade-, scratch-, and corrosion-resistant Kohler® Cashmere Power Armor™ textured e-coat paint.
- Lockable, flush-mounted door latches.
- Certified to withstand 241 kph (150 mph) wind load rating (aluminum enclosures only).

## Additional Standard Features

- Alternator Protection
- Battery Rack and Cables
- Electronic, Isochronous Governor
- Gas Fuel System (includes fuel mixer, electronic secondary gas regulator, gas solenoid valve, and flexible fuel line between the engine and the skid-mounted fuel system components)
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature
- Steel Sound Enclosure
- Three-Way Exhaust Catalyst

## Available Options

### Approvals and Listings

- ☐ CSA Approval
- ☐ UL 2200 Listing (60 Hz only)

### Enclosure

- ☐ Aluminum Sound Enclosure

### Fuel System

- ☐ Dual Fuel NG/LPG (automatic changeover)
- ☐ Flexible Fuel Line  
(required when the generator set skid is spring mounted)
- ☐ Gas Filter
- ☐ Additional Gas Solenoid Valve

### Controller

- ☐ Common Fault Relay
- ☐ Communication Products and PC Software
- ☐ Customer Connection (Decision-Maker® 550 controller only)
- ☐ Dry Contact (isolated alarm) (Decision-Maker® 550 controller only)
- ☐ Input/Output Module (Decision-Maker® 3000 controller only)
- ☐ Remote Annunciator Panel
- ☐ Remote Audiovisual Alarm Panel  
(Decision-Maker® 550 controller only)
- ☐ Remote Emergency Stop
- ☐ Run Relay

### Cooling System

- ☐ Block Heater, 1500 W, 110–120 V
- ☐ Block Heater, 1500 W, 190–240 V  
[recommended for ambient temperatures below 10°C (50°F)]

### Electrical System

- ☐ Alternator Strip Heater
- ☐ Battery
- ☐ Battery Charger, Equalize/Float Type
- ☐ Battery Heater
- ☐ Line Circuit Breaker (NEMA1 enclosure)
- ☐ Line Circuit Breaker with Shunt Trip (NEMA1 enclosure)

### Miscellaneous

- ☐ Air Cleaner Restrictor Indicator
- ☐ Engine Fluids Added
- ☐ Rated Power Factor Testing
- ☐ Rodent Guards

### Literature

- ☐ General Maintenance
- ☐ Overhaul
- ☐ Production

### Warranty

- ☐ 2-Year Basic
- ☐ 5-Year Basic
- ☐ 5-Year Comprehensive

### Other Options

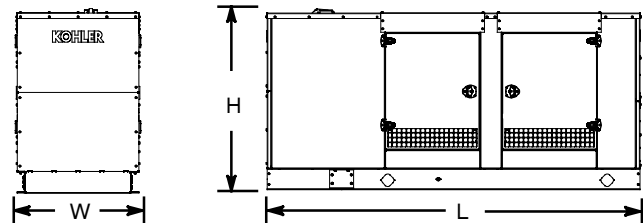
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## Dimensions and Weights

Overall Size, L x W x H, mm (in.) : 3526 x 1153 x 1664  
(138.8 x 45.4 x 65.5)

Weight, wet, kg (lb.):  
 With steel sound enclosure 1725 (3946)  
 With aluminum sound enclosure 1603 (3536)

Weight includes generator set with engine fluids, sound enclosure, and silencer.



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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