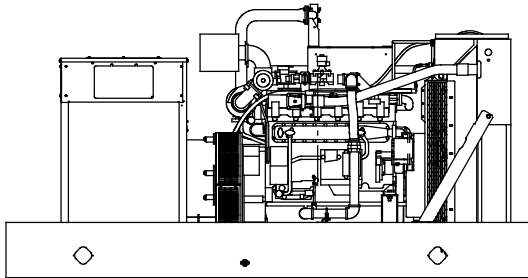




Ratings Range

| | | 60 Hz | 50 Hz |
|----------|-----|---------|---------|
| Standby: | kW | 125-190 | 114-170 |
| | kVA | 125-238 | 143-212 |
| Prime: | kW | 131-170 | 125-148 |
| | kVA | 155-213 | 156-185 |



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 (4S12X and 4S13X):
 - 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.

Generator Set Ratings

| Alternator | Voltage | Ph | Hz | Rich-Burn Natural Gas | | | | Rich-Burn LP Gas (Vapor) | |
|------------|---------|----|---------|---------------------------|---------|-------------------------|---------|---------------------------|------|
| | | | | 130°C Rise Standby Rating | | 105°C Rise Prime Rating | | 130°C Rise Standby Rating | |
| | | | | kW/kVA | Amps | kW/kVA | Amps | kW/kVA | Amps |
| 4S12X | 120/208 | 3 | 60 | 154/193 | 534 | 144/180 | 500 | 130/163 | 451 |
| | 127/220 | 3 | 60 | 164/205 | 538 | 152/190 | 499 | 130/163 | 426 |
| | 120/240 | 3 | 60 | 154/193 | 463 | 144/180 | 433 | 130/163 | 391 |
| | 139/240 | 3 | 60 | 180/225 | 541 | 168/210 | 505 | 130/163 | 391 |
| | 220/380 | 3 | 60 | 140/175 | 266 | 131/164 | 249 | 130/163 | 247 |
| | 240/416 | 3 | 60 | 154/193 | 267 | 144/180 | 250 | 130/163 | 226 |
| | 277/480 | 3 | 60 | 180/225 | 271 | 168/210 | 253 | 130/163 | 195 |
| | 347/600 | 3 | 60 | 172/215 | 207 | 155/194 | 186 | 130/163 | 156 |
| | 110/190 | 3 | 50 | 134/167 | 507 | 125/156 | 474 | 114/143 | 435 |
| | 115/200 | 3 | 50 | 141/176 | 508 | 130/163 | 471 | 114/143 | 413 |
| | 120/208 | 3 | 50 | 146/182 | 505 | 136/170 | 472 | 114/143 | 397 |
| | 110/220 | 3 | 50 | 134/167 | 438 | 125/156 | 409 | 114/143 | 375 |
| 220/380 | 3 | 50 | 134/167 | 254 | 125/156 | 237 | 114/143 | 217 | |
| 230/400 | 3 | 50 | 141/176 | 254 | 130/163 | 235 | 114/143 | 206 | |
| 240/416 | 3 | 50 | 146/182 | 253 | 136/170 | 236 | 114/143 | 198 | |
| 4S13X | 120/208 | 3 | 60 | 184/230 | 638 | 170/213 | 590 | 130/163 | 451 |
| | 127/220 | 3 | 60 | 190/238 | 623 | 170/213 | 558 | 130/163 | 426 |
| | 120/240 | 3 | 60 | 184/230 | 553 | 170/213 | 511 | 130/163 | 391 |
| | 139/240 | 3 | 60 | 190/238 | 571 | 170/213 | 511 | 130/163 | 391 |
| | 220/380 | 3 | 60 | 168/210 | 319 | 170/213 | 300 | 130/163 | 247 |
| | 240/416 | 3 | 60 | 184/230 | 319 | 170/213 | 295 | 130/163 | 226 |
| | 277/480 | 3 | 60 | 190/238 | 286 | 170/213 | 256 | 130/163 | 195 |
| | 347/600 | 3 | 60 | 181/226 | 218 | 162/203 | 195 | 130/163 | 156 |
| | 110/190 | 3 | 50 | 157/196 | 596 | 145/181 | 550 | 116/145 | 441 |
| | 115/200 | 3 | 50 | 165/206 | 595 | 148/185 | 534 | 116/145 | 419 |
| | 120/208 | 3 | 50 | 170/212 | 588 | 148/185 | 514 | 116/145 | 402 |
| | 110/220 | 3 | 50 | 157/196 | 514 | 145/181 | 475 | 116/145 | 381 |
| 220/380 | 3 | 50 | 157/196 | 298 | 145/181 | 275 | 116/145 | 220 | |
| 230/400 | 3 | 50 | 165/206 | 297 | 148/185 | 267 | 116/145 | 209 | |
| 240/416 | 3 | 50 | 170/212 | 294 | 148/185 | 257 | 116/145 | 201 | |
| 4M6226 | 120/240 | 1 | 60 | 175/175 | 729 | 155/155 | 646 | 125/125 | 521 |

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:* 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 (4SX) | Kohler |
| Type | 4-Pole, Rotating-Field |
| Exciter type | Brushless, Permanent-Magnet |
| Leads: quantity, type | |
| 4SX | 12, Reconnectable |
| 4M6226 | 4, 110–120/220–240 V |
| 4SX | 4, 600 V |
| 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 4S12X (12 lead) | 480 (60Hz), 380 (50Hz) |
| 480 V, 380 V 4S13X (12 lead) | 570 (60Hz), 463 (50Hz) |
| 240 V 4M6226 (4 lead) | 360 (60Hz) |

- 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.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

Application Data

Engine

| Engine Specifications | 60 Hz | 50 Hz |
|--|---|------------|
| Manufacturer | Doosan | |
| Engine model | D111TIC | |
| Engine type | 11.1 L, 4-Cycle, Turbocharged, Aftercooled | |
| Cylinder arrangement | 6, Inline | |
| Displacement, L (cu. in.) | 11.05 (674) | |
| Bore and stroke, mm (in.) | 123 x 155 (4.84 x 6.10) | |
| Compression ratio | 10.5:1 | |
| Piston speed, m/min. (ft./min.) | 558 (1831) | 465 (1525) |
| Main bearings: quantity, type | 7, Precision Half-Shell | |
| Rated rpm | 1800 | 1500 |
| Max. power at rated rpm, kWm (BHP) | 225 (302) | 195 (261) |
| 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) | 765 (1090) | 714 (1018) |
| 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 |

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 ₂ O) | 1.74–2.74 (7.0–11.0) | |
| LPG vapor withdrawal fuel supply pressure, kPa (in. H ₂ O) | 1.24–2.74 (5.0–11.0) | |
| Dual fuel engine, LPG vapor withdrawal fuel supply pressure, kPa (in. H ₂ O) | 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.

Application Data

Lubrication

| Lubricating System | 60 Hz | 50 Hz |
|--|---------------|-------|
| Type | Full Pressure | |
| Oil pan capacity, L (qt.) § | 25 (26.4) | |
| Oil pan capacity with filter, L (qt.) § | 27 (28.8) | |
| Oil filter: quantity, type § | 1, Cartridge | |
| Oil cooler | Water-Cooled | |
| § Kohler recommends the use of Kohler Genuine oil and filters. | | |

Cooling

| Radiator System | 60 Hz | 50 Hz |
|--|-------------|-------------|
| Ambient temperature, °C (°F) * | 50 (122) | |
| Engine jacket water capacity, L (gal.) | 21 (5.5) | |
| Radiator system capacity, including engine, L (gal.) | 116 (30.6) | |
| Engine jacket water flow, Lpm (gpm) | 284 (75) | 237 (63) |
| Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.) | 128 (7300) | 98 (6700) |
| Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.) | 22.1 (1260) | 21.0 (1200) |
| Water pump type | Centrifugal | |
| Fan diameter, including blades, mm (in.) | 965 (38) | |
| Fan, kWm (HP) | 13.4 (18) | 7.8 (10) |
| Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H ₂ O) | 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) † | 510 (18000) | 425 (15000) |
| Combustion air, kg/hr. (cfm) | 750 (366) | 625 (305) |
| Heat rejected to ambient air: | | |
| Engine, kW (Btu/min.) | 54.3 (3090) | 47.7 (2714) |
| Alternator, kW (Btu/min.) | 14.4 (820) | 13.7 (780) |

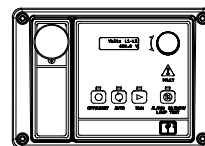
† Air density = 1.20 kg/m³ (0.075 lbm/ft³)

| Fuel Consumption ‡ | 60 Hz | 50 Hz |
|---|-----------------------|-------------|
| Natural Gas, m³/hr. (cfh) at % load | Standby Rating | |
| 100% | 54.6 (1928) | 48.3 (1706) |
| 75% | 42.5 (1501) | 37.0 (1307) |
| 50% | 30.2 (1067) | 25.9 (915) |
| 25% | 18.0 (636) | 15.3 (540) |
| Natural Gas, m³/hr. (cfh) at % load | Prime Rating | |
| 100% | 50.3 (1776) | 43.6 (1540) |
| 75% | 39.3 (1388) | 33.5 (1183) |
| 50% | 28.1 (992) | 23.7 (837) |
| 25% | 16.4 (579) | 13.7 (484) |
| LP Gas, m³/hr. (cfh) at % load | Standby Rating | |
| 100% | 19.9 (703) | 16.8 (593) |
| 75% | 17.0 (600) | 13.1 (462) |
| 50% | 11.5 (406) | 9.7 (343) |
| 25% | 7.2 (254) | 6.0 (212) |

‡ Nominal fuel rating: Natural gas, 37 MJ/m³ (1000 Btu/ft.³)
LP vapor, 93 MJ/m³ (2500 Btu/ft.³)

LP vapor conversion factors:
8.58 ft.³ = 1 lb.
0.535 m³ = 1 kg.
36.39 ft.³ = 1 gal.

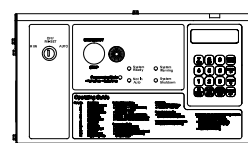
Controllers



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.

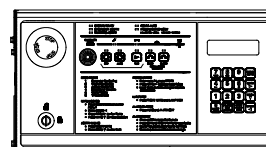


Decision-Maker® 550 Controller

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
- NFPA 110 Level 1 capability

Refer to G6-46 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 with first-on logic, synchronizer, kW and kVAR load sharing, and protective relays
- 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.

Modbus® is a registered trademark of Schneider Electric.

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

Available Options

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 (kit: PA-324470)
- 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
- Customer Connection (Decision-Maker® 550 controller only)
- Decision-Maker® Paralleling System (DPS)
(Decision-Maker® 6000 controller only)
- Dry Contact Kit (isolated alarm)
(Decision-Maker® 550 and 6000 controllers only)
- Two Input/Five Output Module (APM402 controller only)
- Prime Power Switch
(Decision-Maker® 550 and 6000 controllers only)
- Remote Audiovisual Alarm Panel
(Decision-Maker® 550 and 6000 controllers only)
- Remote Emergency Stop
- Remote Serial Annunciator Panel
- Run Relay
- Manual Speed Adjust
(Decision-Maker® 550 and APM402 controllers only)

Cooling System

- Block Heater, 2500 W, 90–120 V, 1 Ph
- Block Heater, 2500 W, 190–208 V, 1 Ph
- Block Heater, 2500 W, 210–240 V, 1 Ph
- Block Heater, 2500 W, 380–480 V, 1 Ph
Recommended for ambient temperatures below 10°C (50°F)
- Radiator Duct Flange

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

Literature

- General Maintenance
- NFPA 110
- Overhaul
- Production

Warranty

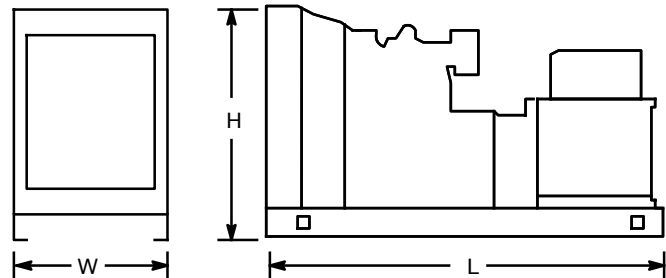
- 2-Year Basic Limited Warranty
- 2-Year Prime Limited Warranty
- 5-Year Basic Limited Warranty
- 5-Year Comprehensive Limited Warranty

Other Options

- _____
- _____
- _____
- _____

Dimensions and Weights

Overall Size, L x W x H, max., mm (in.): 3575 x 1350 x 1908
 (140.7 x 53.1 x 75.1)
 Weight (radiator model), wet, max., kg (lb.): 2379 (5245)



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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