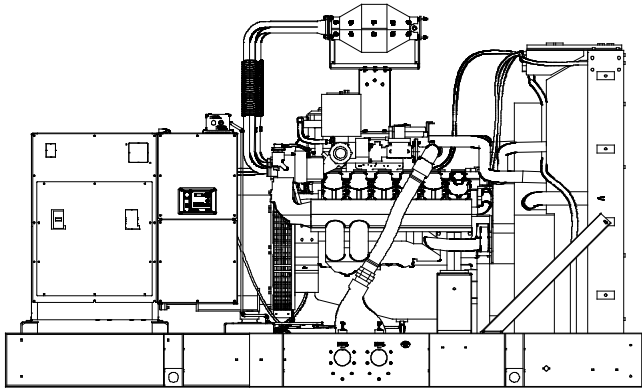


EPA-Certified for Stationary and Mobile Emergency and Non-Emergency Applications

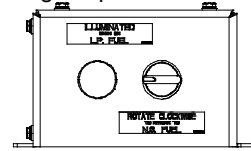
Ratings Range

| | | |
|-----------------|------------|--------------|
| | | 60 Hz |
| Standby: | kW | 295-400 |
| | kVA | 369-500 |
| Prime: | kW | 360-365 |
| | kVA | 450-456 |



Standard Features

- Rehlko 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 cULus 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 for purchase in some jurisdictions.
- Alternator features:
 - The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
 - 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 LP 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 LP ratings to prevent an overload condition.



Dual Fuel Reset Box

Generator Set Ratings

| Alternator | Voltage | Ph | Hz | Rich-Burn Natural Gas | | | | Rich-Burn LP Gas (Vapor) | |
|------------|---------|----|----|-----------------------|------|--------------|------|--------------------------|------|
| | | | | 130°C Rise | | 105°C Rise | | 130°C Rise | |
| | | | | Standby Rating | | Prime Rating | | Standby Rating | |
| | | | | kW/kVA | Amps | kW/kVA | Amps | kW/kVA | Amps |
| 5M4024 | 120/208 | 3 | 60 | 400/500 | 1388 | 360/450 | 1250 | 295/369 | 1025 |
| | 127/220 | 3 | 60 | 400/500 | 1313 | 360/450 | 1181 | 295/369 | 969 |
| | 220/380 | 3 | 60 | 400/500 | 760 | 360/450 | 684 | 295/369 | 561 |
| | 277/480 | 3 | 60 | 400/500 | 602 | 360/450 | 542 | 295/369 | 444 |
| 5M4027 | 120/208 | 3 | 60 | 400/500 | 1388 | 360/450 | 1250 | 295/369 | 1025 |
| | 127/220 | 3 | 60 | 400/500 | 1313 | 360/450 | 1181 | 295/369 | 969 |
| | 120/240 | 3 | 60 | 400/500 | 1203 | 360/450 | 1083 | 295/369 | 888 |
| | 220/380 | 3 | 60 | 400/500 | 760 | 360/450 | 684 | 295/369 | 561 |
| 4M4266 | 277/480 | 3 | 60 | 400/500 | 602 | 360/450 | 542 | 295/369 | 444 |
| | 347/600 | 3 | 60 | 400/500 | 482 | 365/456 | 439 | 300/375 | 361 |

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. 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.

Alternator Specifications

| Specifications | Alternator |
|--|--|
| Type | 4-Pole, Rotating-Field |
| Exciter type | Brushless, Permanent- Magnet Pilot Exciter |
| Leads: quantity, type | 10/12, Reconnectable 4, 600 V |
| Voltage regulator | Solid State, Volts/Hz |
| Insulation: | NEMA MG1 |
| Material | Class H, Synthetic, Nonhygroscopic |
| Temperature rise | 130°C, 150°C Standby |
| Bearing: quantity, type | 1, Sealed |
| Coupling | Flexible Disc |
| Amortisseur windings | Full |
| Rotor balancing | 125% |
| 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 5M4024 (10 lead) | 1350 (60Hz) |
| 480 V 5M4027 (12 lead) | 2200 (60Hz) |
| 600 V 4M4266 (4 lead) | 1300 (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.
- Brushless alternator with brushless pilot exciter for excellent load response.

Application Data

Engine

Engine Specifications

| | |
|--|--|
| Manufacturer | PSI/Doosan |
| Engine model | D219L |
| Engine type | 21.9 L, 4-Cycle, Turbocharged, Charge Air-Cooled |
| Cylinder arrangement | V-12 |
| Displacement, L (cu. in.) | 21.9 (1336) |
| Bore and stroke, mm (in.) | 128 x 142 (5.0 x 5.6) |
| Compression ratio | 10.5:1 |
| Piston speed, m/min. (ft./min.) | 511 (1677) |
| Main bearings: quantity, type | 14, Precision Half-Shell |
| Rated rpm | 1800 |
| Max. power at rated rpm, kWm (BHP) | |
| Natural Gas | 451 (605) |
| LP Gas | 352 (472) |
| Cylinder head material | Cast Iron |
| Piston: type, material | — |
| Crankshaft material | Forged Steel |
| Valve material | — |
| 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 | Wet |
| Exhaust flow at rated kW, m ³ /min. (cfm) | 1932 (2529) |
| Exhaust temperature at rated kW, dry exhaust, °C (°F) | 614 (1136) |
| Maximum allowable back pressure overall, kPa (in. Hg) | 17.9 (5.3) |
| Maximum allowable back pressure after catalyst, kPa (in. Hg) | 9.7 (2.9) |
| Engine exhaust outlet size, mm (in.) | Flanged Outlet at Catalyst, see ADV drawing |

Engine Electrical

Engine Electrical System

| | |
|--|----------|
| 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, 925 |
| Battery voltage (DC) | 12 |

Fuel

Fuel System - Rich Burn

| | |
|---|-----------------------------------|
| Fuel type | Natural Gas, LP Gas, or Dual Fuel |
| Fuel supply line inlet | 3.0 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) | 1.74-2.74 (7.0-11.0) |
| Dual fuel engine, LPG vapor withdrawal fuel supply pressure, kPa (in. H ₂ O) | 1.74 (7.0) |
| 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

| | |
|---|---------------|
| Type | Full Pressure |
| Oil pan capacity, L (qt.) § | 40 (42.3) |
| Oil pan capacity with filter, L (qt.) § | 47.1 (49.7) |
| Oil filter: quantity, type § | 2, Cartridge |
| Oil cooler | Water-Cooled |

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

Cooling

Radiator System

| | |
|--|-------------|
| Ambient temperature, °C (°F)* | 50 (122) |
| Engine jacket water capacity, L (gal.) | 44 (12) |
| Radiator system capacity, including engine, L (gal.) | 190 (51) |
| Engine jacket water flow, Lpm (gpm) | 570 (151) |
| Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.) | 516 (29345) |
| Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.) | 65 (3686) |
| Water pump type | Centrifugal |
| Fan diameter, including blades, mm (in.) | 1321 (52) |
| Fan, kWm (HP) | 31 (42) |
| 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

| | |
|---|-------------|
| Radiator-cooled cooling air, m ³ /min. (scfm)† | 870 (30700) |
| Combustion air, m ³ /min. (cfm) | 1821 (829) |
| Heat rejected to ambient air: | |
| Engine, kW (Btu/min.) | 25 (1437) |
| Alternator, kW (Btu/min.) | 23 (1309) |

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

Fuel Consumption‡

| Natural Gas, m ³ /hr. (cfh) at % load | Standby Rating |
|--|----------------|
| 100% | 136.2 (4808) |
| 75% | 107.6 (3801) |
| 50% | 79.9 (2822) |
| 25% | 51.8 (1829) |

| Natural Gas, m ³ /hr. (cfh) at % load | Prime Rating |
|--|--------------|
| 100% | 109.2 (3856) |
| 75% | 85.1 (3005) |
| 50% | 60.5 (2137) |
| 25% | 37.7 (1331) |

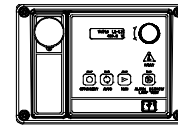
| LP Gas, m ³ /hr. (cfh) at % load | Standby Rating |
|---|----------------|
| 100% | 44.1 (1556) |
| 75% | 35.3 (1246) |
| 50% | 26.8 (945) |
| 25% | 18.1 (639) |

‡ Nominal Fuel Rating: Natural gas, 37 MJ/m³ (1000 Btu/ft³)
LP Vapor, 93 MJ/m³ (2500 Btu/ft³)

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.

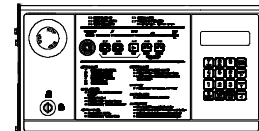


APM603 Controller

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.

Modbus® is a registered trademark of Schneider Electric.

BACnet® is a registered trademark of ASHRAE.

Standard Features

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

Available Options

Circuit Breakers

- | Type | Rating |
|---|--|
| <input type="checkbox"/> Magnetic Trip | <input type="checkbox"/> 80% |
| <input type="checkbox"/> Thermal Magnetic Trip | <input type="checkbox"/> 100% |
| <input type="checkbox"/> Electronic Trip (LI) | Operation |
| <input type="checkbox"/> Electronic Trip with Short Time (LSI) | <input type="checkbox"/> Manual |
| <input type="checkbox"/> Electronic Trip with Ground Fault (LSIG) | <input type="checkbox"/> Manual with Shunt Trip |
| | <input type="checkbox"/> 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

- cULus (UL 2200 and CSA)
- Hurricane Rated Enclosure
- IBC Seismic Certification

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 includes two silencers)
- Flexible Exhaust Connector, Stainless Steel (Kit contains two flexible exhaust connectors)

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 controller only)
- Pre-Alarms, NFPA110
- Remote Emergency Stop
- Lockable Remote Emergency Stop
- Remote Serial Annunciator Panel
- Run Relay (standard with APM603)
- Manual Key Switch (APM603 controller only)
- Manual Speed Adjust (APM402 controller only)

Cooling System

- Block Heater, 6000 W, 208 V, 1 Ph
- Block Heater, 6000 W, 240 V, 1 Ph (Select 1 Ph or 3 Ph)
- Block Heater, 6000 W, 480 V, (Select 1 Ph or 3 Ph) Required for Ambient Temperatures Below 10°C (50°F)
- Radiator Duct Flange

Electrical System

- Generator Heater
- Battery
- Battery Charger
- Battery Charger Temperature Compensation
- Battery Heater

Fuel System

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

Miscellaneous

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

Literature

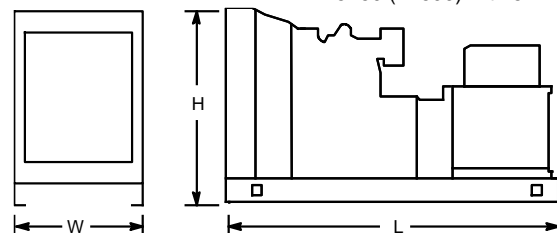
- General Maintenance
- NFPA 110
- Overhaul
- Production

Warranty

- 2-Year Basic Limited Warranty
- 2-Year Prime Limited Warranty
- 5-Year Basic Limited Warranty
- 10-Year Major Component Limited Warranty

Dimensions and Weights

| | |
|--------------------------------|--------------------------|
| Overall Size, L x W x H, max., | 4100 x 2190 x 2464 |
| mm (in.): | (161.4 x 86.2 x 97.0) |
| Weight (radiator model), wet, | 5040 (11115) with 4M4266 |
| max., kg (lb.): | 5220 (11510) with 5M4024 |
| | 5260 (11600) with 5M4027 |



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