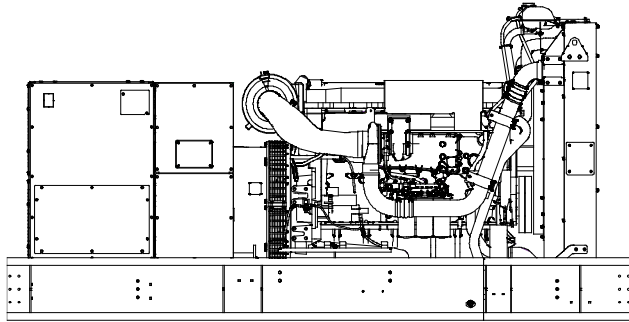


**Tier 2 EPA-Certified for Stationary
Emergency Applications**
Ratings Range

| | | |
|-----------------|------------|--------------|
| | | 60 Hz |
| Standby: | kW | 400-515 |
| | kVA | 500-644 |
| Prime: | kW | 400-460 |
| | kVA | 500-575 |


Standard Features

- Rehlko provides one-source responsibility for the generating system and accessories.
- Approved for use with certified renewable Hydrotreated Vegetable Oil (HVO)/Renewable Diesel (RD) fuels compliant with EN15940/ASTM D975.
- 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 standard one-year limited warranty covers all generator set systems and components. Two-, five-, and ten-year extended limited warranties are also available.
- Alternator features:
 - The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
 - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
 - Rehlko designed controllers for one-source system integration and remote communication. See Controllers on page 3.
 - The low coolant level shutdown prevents overheating (standard on radiator models only).
 - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
 - An electronic, isochronous governor delivers precise frequency regulation.
 - Multiple circuit breaker configurations.

Generator Set Ratings

| Alternator | Voltage | Ph | Hz | 150°C Rise Standby Rating | | 130°C Rise Standby Rating | | 125°C Rise Prime Rating | | 105°C Rise Prime Rating | |
|------------|---------|----|----|---------------------------|------|---------------------------|------|-------------------------|------|-------------------------|------|
| | | | | kW/kVA | Amps | kW/kVA | Amps | kW/kVA | Amps | kW/kVA | Amps |
| 5M4024* | 120/208 | 3 | 60 | 450/562 | 1562 | 440/550 | 1527 | 440/550 | 1527 | 435/544 | 1510 |
| | 127/220 | 3 | 60 | 465/581 | 1526 | 465/581 | 1526 | 450/562 | 1477 | 450/562 | 1477 |
| | 139/240 | 3 | 60 | 505/631 | 1519 | 475/594 | 1429 | 450/562 | 1354 | 450/562 | 1354 |
| | 220/380 | 3 | 60 | 400/500 | 760 | 400/500 | 760 | 400/500 | 760 | 400/500 | 760 |
| | 240/416 | 3 | 60 | 450/562 | 781 | 440/550 | 764 | 440/550 | 764 | 435/544 | 755 |
| 5M4027 | 277/480 | 3 | 60 | 505/631 | 760 | 475/594 | 715 | 450/562 | 677 | 450/562 | 677 |
| | 120/208 | 3 | 60 | 500/625 | 1735 | 475/594 | 1649 | 450/562 | 1562 | 445/556 | 1544 |
| | 127/220 | 3 | 60 | 505/631 | 1657 | 500/625 | 1641 | 450/562 | 1477 | 450/562 | 1477 |
| | 139/240 | 3 | 60 | 505/631 | 1519 | 505/631 | 1519 | 450/562 | 1354 | 450/562 | 1354 |
| | 220/380 | 3 | 60 | 405/506 | 770 | 405/506 | 770 | 405/506 | 770 | 405/506 | 770 |
| 5M4028 | 240/416 | 3 | 60 | 500/625 | 868 | 475/594 | 825 | 450/562 | 781 | 445/556 | 772 |
| | 277/480 | 3 | 60 | 505/631 | 760 | 505/631 | 760 | 450/562 | 677 | 450/562 | 677 |
| | 120/208 | 3 | 60 | 510/638 | 1770 | 510/638 | 1770 | 455/569 | 1579 | 455/569 | 1579 |
| | 127/220 | 3 | 60 | 510/638 | 1674 | 510/638 | 1674 | 455/569 | 1493 | 455/569 | 1493 |
| | 139/240 | 3 | 60 | 510/638 | 1534 | 510/638 | 1534 | 455/569 | 1369 | 455/569 | 1369 |
| 5M4030* | 220/380 | 3 | 60 | 470/588 | 893 | 470/588 | 893 | 455/569 | 865 | 455/569 | 865 |
| | 240/416 | 3 | 60 | 510/638 | 885 | 510/638 | 885 | 455/569 | 790 | 455/569 | 790 |
| | 277/480 | 3 | 60 | 510/638 | 767 | 510/638 | 767 | 455/569 | 685 | 455/569 | 685 |
| | 120/208 | 3 | 60 | 510/638 | 1770 | 510/638 | 1770 | 455/569 | 1579 | 455/569 | 1579 |
| | 127/220 | 3 | 60 | 510/638 | 1674 | 510/638 | 1674 | 455/569 | 1493 | 455/569 | 1493 |
| 5M4032 | 139/240 | 3 | 60 | 515/644 | 1549 | 510/638 | 1534 | 460/575 | 1384 | 455/569 | 1369 |
| | 220/380 | 3 | 60 | 485/606 | 922 | 485/606 | 922 | 455/569 | 865 | 455/569 | 865 |
| | 240/416 | 3 | 60 | 510/638 | 885 | 510/638 | 885 | 455/569 | 790 | 455/569 | 790 |
| | 277/480 | 3 | 60 | 515/644 | 775 | 510/638 | 767 | 460/575 | 692 | 455/569 | 685 |
| | 120/208 | 3 | 60 | 515/644 | 1787 | 515/644 | 1787 | 460/575 | 1597 | 460/575 | 1597 |
| 5M4162 | 127/220 | 3 | 60 | 515/644 | 1690 | 515/644 | 1690 | 460/575 | 1509 | 460/575 | 1509 |
| | 139/240 | 3 | 60 | 515/644 | 1549 | 515/644 | 1549 | 460/575 | 1384 | 460/575 | 1384 |
| | 220/380 | 3 | 60 | 510/638 | 969 | 510/638 | 969 | 460/575 | 874 | 455/569 | 865 |
| | 240/416 | 3 | 60 | 515/644 | 894 | 515/644 | 894 | 460/575 | 799 | 460/575 | 799 |
| | 277/480 | 3 | 60 | 515/644 | 775 | 515/644 | 775 | 460/575 | 692 | 460/575 | 692 |
| 5M4164 | 220/380 | 3 | 60 | 500/625 | 950 | 485/606 | 922 | 455/569 | 865 | 455/569 | 865 |
| 5M4270 | 220/380 | 3 | 60 | 510/638 | 969 | 515/644 | 979 | 455/569 | 865 | 455/569 | 865 |
| 5M4272 | 347/600 | 3 | 60 | 500/625 | 602 | 505/631 | 608 | 450/562 | 542 | 450/562 | 542 |
| 5M4272 | 347/600 | 3 | 60 | 510/638 | 614 | 510/638 | 614 | 455/569 | 548 | 455/569 | 548 |

* Only available for IBC and/or OSHPD orders.

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.

Alternator Specifications

| Specifications | Alternator |
|--|----------------------------------|
| Type | 4-Pole, Rotating-Field |
| Exciter type | Brushless, Permanent-Magnet |
| Leads: quantity, type | 10/12, 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 |
| Rotor balancing | 125% |
| Voltage regulation, no-load to full-load (with < 0.5% drift due to temp. variation) | 3-Phase Sensing, 0.25% |
| 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 5M4024 (10 lead) | 1350 |
| 480 V, 380 V 5M4027 (12 lead) | 1575 |
| 480 V, 380 V 5M4028 (10 lead) | 1800 |
| 480 V, 380 V 5M4030 (10 lead) | 1800 |
| 480 V, 380 V 5M4032 (10 lead) | 2200 |
| 380 V 5M4162 (4 lead) | 2100 |
| 380 V 5M4164 (4 lead) | 2300 |
| 600 V 5M4270 (4 lead) | 1250 |
| 600 V 5M4272 (4 lead) | 1750 |

- 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.
- Digital solid-state, volts-per-hertz voltage regulator with $\pm 0.25\%$ no-load to full-load regulation.
- Brushless alternator with brushless pilot exciter for excellent load response.

Application Data

Engine

Engine Specifications

| | |
|--|---|
| Engine manufacturer | Volvo |
| Engine model | TAD1641GE-B |
| Engine type | 4-Cycle, Turbocharged, Charge Air-Cooled |
| Cylinder arrangement | 6, Inline |
| Displacement, L (cu. in.) | 16.12 (984) |
| Bore and stroke, mm (in.) | 144 x 165 (5.67 x 6.50) |
| Compression ratio | 17:1 |
| Piston speed, m/min. (ft./min.) | 594 (1949) |
| Main bearings: quantity, type | 7, Precision Half-Shell |
| Rated rpm | 1800 |
| Max. power at rated rpm, kWm (BHP) | 565 (757) |
| Cylinder head material | Cast Iron |
| Piston: type, material | Steel |
| Crankshaft material | Forged Steel |
| Valve material | Nimonic |
| Governor: type, make/model | EMS 2.4 |
| Frequency regulation, no-load to full-load | Isochronous |
| Frequency regulation, steady state | $\pm 0.25\%$ |
| Frequency | Field-Convertible |
| Air cleaner type, all models | Dry |

Exhaust

Exhaust System

| | |
|--|-----------------|
| Exhaust flow at rated kW, m ³ /min. (cfm) | 110.4 (3899) |
| Exhaust temperature at rated kW, dry exhaust, °C (°F) | 478 (893) |
| Maximum allowable back pressure, kPa (in. Hg) | 10 (3.0) |
| Engine exhaust outlet size, mm (in.) | See ADV drawing |

Engine Electrical

Engine Electrical System

| | |
|--|-----------|
| Battery charging alternator: | |
| Ground (negative/positive) | Negative |
| Volts (DC) | 24 |
| Ampere rating | 80 |
| Starter motor rated voltage (DC) | 24 V, 7kW |
| Battery, recommended cold cranking amps (CCA): | |
| Qty., CCA rating each | Two, 925 |
| Battery voltage (DC) | 12 |

Fuel

Fuel System

| | |
|--|--|
| Fuel supply line, min. ID, mm (in.) | 8 (0.31) |
| Fuel return line, min. ID, mm (in.) | 6 (0.25) |
| Max. fuel flow, Lph (gph) | 204.4 (54) |
| Max. fuel pump restriction, kPa (in. Hg) | 30 (8.9) |
| Max. return line restriction, kPa (in. Hg) | 20 (5.9) |
| Fuel prime pump | Manual |
| Fuel filter: quantity, type | 2, Primary, 10 Micron/ Secondary w/Water Separator, 3 Microns |
| Recommended fuel | #2 Diesel / HVO / RD |

Lubrication

Lubricating System

| | |
|--|---------------|
| Type | Full Pressure |
| Oil pan capacity, L (qt.) § | 42.0 (44.4) |
| Oil pan capacity with filter, L (qt.) § | 48.1 (50.8) |
| Oil filter: quantity, type § | 3, Cartridge |
| Oil cooler | Water-Cooled |
| § Rehiko recommends the use of Rehiko Genuine oil and filters. | |

Application Data

Cooling

Radiator System

| | |
|--|---------------|
| Ambient temperature, °C (°F)* | 50 (122) |
| Engine jacket water capacity, L (gal.): | 39.7 (10.5) |
| Radiator system capacity, including engine, L (gal.): | 67 (17.7) |
| Engine jacket water flow, Lpm (gpm) | 463.3 (122.4) |
| Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.) | 231 (13137) |
| Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.) | 147 (8360) |
| Water pump type | Centrifugal |
| Fan diameter, including blades, mm (in.) | 890 (35) |
| Fan, kWm (HP) | 19 (25.5) |
| 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 and weather housing with external silencer reduce ambient temperature capability by 5°C (9°F).

Operation Requirements

Air Requirements

| | |
|---|-------------|
| Radiator-cooled cooling air, m ³ /min. (scfm)† | 598 (21120) |
| Combustion air, m ³ /min. (cfm) | 46 (1617) |
| Heat rejected to ambient air: | |
| Engine, kW (Btu/min.) | 24 (1365) |
| Alternator, kW (Btu/min.) | 29 (1660) |

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

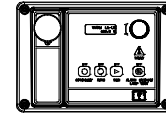
Fuel Consumption**

| Diesel, Lph (gph) at % load | Standby Rating |
|-----------------------------|----------------|
| 100% | 139.3 (36.8) |
| 75% | 101.4 (26.8) |
| 50% | 68.1 (18.0) |
| 25% | 38.6 (10.2) |

| Diesel, Lph (gph) at % load | Prime Rating |
|-----------------------------|--------------|
| 100% | 121.9 (32.0) |
| 75% | 89.7 (23.7) |
| 50% | 60.6 (16.0) |
| 25% | 33.7 (8.9) |

** Volumetric Fuel consumption is up to 4% higher when using HVO/RD than #2 ULSD.

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.

Modbus® is a registered trademark of Schneider Electric.

BACnet® is a registered trademark of ASHRAE.

Standard Features

- Alternator Protection
- Battery Rack and Cables
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature

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"/> Electrically Operated (for paralleling) |

Circuit Breaker Mounting

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

Approvals and Listings

- ☐ California OSHPD Pre-Approval
- ☐ CSA Certified
- ☐ Hurricane Rated Enclosure
- ☐ IBC Seismic Certification
- ☐ UL 2200 Listing

Enclosed Unit

- ☐ Sound Enclosure/Fuel Tank Packages
- ☐ Weather Enclosure/Fuel Tank Packages

Open Unit

- ☐ Exhaust Silencer, Hospital (kit: PA-354907)
- ☐ Exhaust Silencer, Critical (kit: PA-354894)
- ☐ Flexible Exhaust Connector, Stainless Steel

Fuel System

- ☐ Flexible Fuel Lines, Rubber
- ☐ Flexible Fuel Lines, Stainless Steel
- ☐ Fuel Pressure Gauge

Controller

- ☐ Common Failure Relay (APM603 controllers only)
- ☐ Communications Products and PC Software
- ☐ Two Input/Five Output Module (APM402 controller only)
- ☐ Four Input/Fifteen Output Module (APM603 controller only)
- ☐ Remote Emergency Stop
- ☐ Remote Mounting Cable
- ☐ Remote Serial Annunciator Panel
- ☐ Run Relay (standard with APM603, optional with others)
- ☐ Manual Key Switch (APM603 controller only)
- ☐ Manual Speed Adjust (APM402 controller only)

Cooling System

- ☐ Block Heater; 4000 W, 190/208 V, 1 Ph
- ☐ Block Heater; 4000 W, 210/240 V, 1 Ph
- ☐ Block Heater; 4000 W, 380/480 V, 1 Ph
Required for Ambient Temperatures Below 0°C (32°F)
- ☐ Radiator Duct Flange

Electrical System

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

Miscellaneous

- ☐ Air Cleaner, Heavy Duty
- ☐ Air Cleaner Restriction Indicator
- ☐ Closed Crankcase Ventilation
- ☐ Engine Fluids (oil and coolant) Added
- ☐ Rated Power Factor Testing

Literature

- ☐ General Maintenance
- ☐ NFPA 110
- ☐ Overhaul
- ☐ Production

Warranty

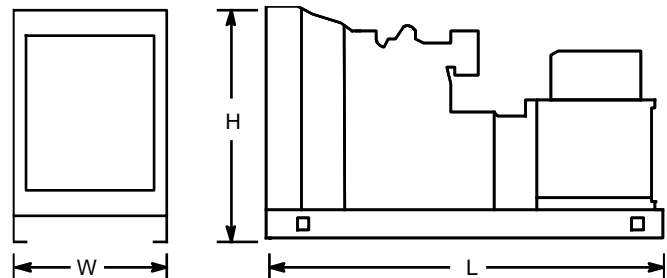
- ☐ 2-Year Basic Limited Warranty
- ☐ 2-Year Prime Limited Warranty
- ☐ 5-Year Basic Limited Warranty
- ☐ 5-Year Comprehensive Limited Warranty
- ☐ 10-Year Major Components Limited Warranty

Dimensions and Weights

Overall Size, L x W x H, mm (in.): 4229 x 1829 x 1942
(166.5 x 72.0 x 76.5)

Weight (radiator model), wet, max., kg (lb.): 4082 (9000)

Note: See ADV drawing for specific dimensions based on accessory selections.



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