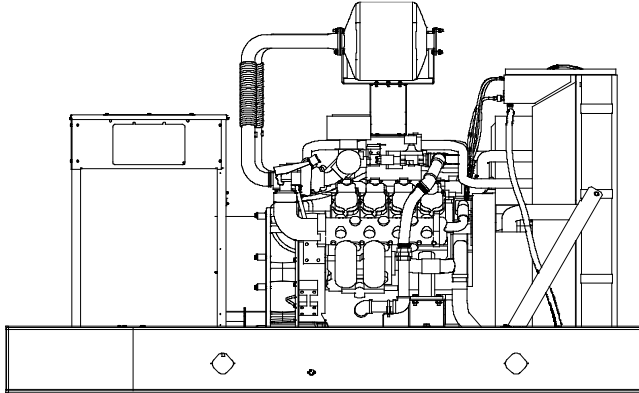


EPA-Certified for Stationary Emergency Applications

Ratings Range

		60 Hz
Standby:	kW	230-300
	kVA	230-375



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.
- 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.

Generator Set Ratings

Rich-Burn Natural Gas 130° C Rise Standby Rating					
Alternator	Voltage	Ph	Hz	kW/kVA	Amps
4UA13	120/208	3	60	300/375	1041
4UA13	127/220	3	60	300/375	985
4UA13	120/240	1	60	230/230	959
4UA13	120/240	3	60	300/375	903
4UA13	139/240	3	60	300/375	903
4UA13	220/380	3	60	280/350	532
4UA13	240/416	3	60	300/375	521
4UA13	277/480	3	60	300/375	452
4UA13	347/600	3	60	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. 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
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	4UA13
4UA13	990 (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 drip-proof 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

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)
Main bearings: quantity, type	10, Precision Half-Shell
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	342 (459)
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, kg/hr. (cfm)	1308 (1895)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	732 (1350)
Maximum allowable back pressure overall kPa (in. Hg)	10.2 (3)
Maximum allowable back pressure after catalyst, kPa (in. Hg)	5.1 (1.5)
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
Fuel supply line inlet	2.0 NPTF
Natural gas and LPG vapor fuel supply pressure, kPa (in. H ₂ O)	1.74-2.74 (7.0-11.0)
Fuel supply pressure, measured at the generator set fuel inlet downstream of any fuel system equipment accessories.	

Fuel Composition Limits *

	Nat. Gas
Methane, % by volume	90 min.
Ethane, % by volume	4.0 max.
Propane, % by volume	1.0 max.
Propene, % by volume	0.1 max.
C ₄ and higher, % by volume	0.3 max.
Sulfur, ppm mass	25 max.
Lower heating value, MJ/m ³ (Btu/ft ³), min.	33.2 (890)

* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local authorized 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.)	43.2 (9.5)
Radiator system capacity, including engine, L (gal.)	227.3 (50)
Engine jacket water flow, Lpm (gpm)	680 (180)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	284 (16189)
Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)	47 (2670)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	1143 (45)
Fan, kWm (HP)	16 (22)
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 8°C (15°F).

Operation Requirements

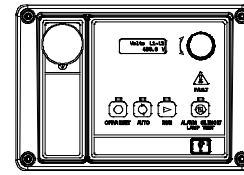
Air Requirements

Radiator-cooled cooling air, m ³ /min. (scfm) †	638 (22500)
Combustion air, m ³ /min. (cfm)	1227 (687)
Heat rejected to ambient air:	
Engine, kW (Btu/min.)	66 (3754)
Alternator, kW (Btu/min.)	23 (1309)
† Air density = 1.20 kg/m ³ (0.075 lbm/ft ³)	

Fuel Consumption‡

Natural Gas, m ³ /hr. (cfh) at % load	Standby Ratings
100%	100.4 (3545)
75%	80.9 (2856)
50%	61.3 (2165)
25%	44.9 (1582)
‡ Nominal fuel rating: Natural gas, 37 MJ/m ³ (1000 Btu/ft ³)	

Controllers

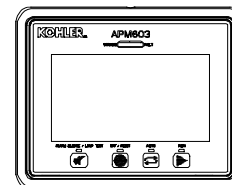


APM402 Controller

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 2 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
- Closed Crankcase Ventilation (CCV) with Filters
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Low Coolant Level Shutdown
- Oil Drain Extension
- Operation and Installation Literature
- 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)
- IBC Seismic Certification
- Hurricane Rated Enclosure

Enclosure 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

Controller

- Common Failure Relay (APM603 controller 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 Serial Annunciator Panel
- Run Relay (standard with APM603)
- 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 Charger Temperature Compensation
- Battery Heater

Fuel System

- Flexible Fuel Lines (required when the generator set skid is spring mounted)
- Gas Filter
- Secondary Gas Solenoid Valve

Miscellaneous

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

Literature

- General Maintenance
- NFPA 110
- Overhaul
- Production

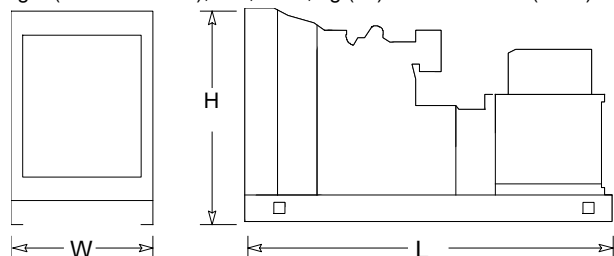
Warranty

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

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 authorized distributor for more detailed information.