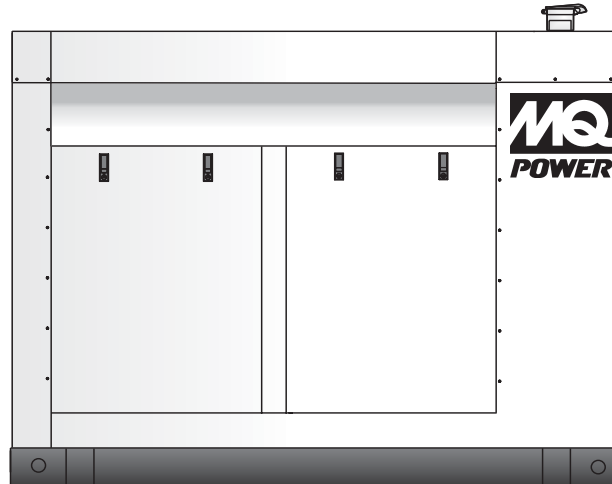




# 45kW Natural Gas On-Site Power Industrial Generator

Model	Standby Rating	
MQP45GM	60 Hz	45 kW (56 kVA)
	1800 RPM	



## Standard Features

### Heavy Duty Engine

- Natural gas or liquid propane, naturally aspirated, 4-cycle, water cooled.
- Electronic speed control governor.

### Alternator

- Brushless, 4-pole, synchronous, 12 lead design.
- Class H insulation system conforms to NEMA MG1-22, BS5000, CSA-C22-2, IEC-34-1 standards for temperature rise.
- Sustained short-circuit capability allowing downstream coordination breakers to trip without collapsing the generator field.
- Drip-proof, self-venting, amortisseur windings.
- Epoxy impregnated windings with tropical insulation for increased environmental protection and long life.
- Exceptional waveshape and voltage balance; 2/3 pitch winding to minimize harmonic distortion.

### Electronic Voltage Regulator

- Encapsulated electronic voltage regulator precisely regulates the current into the exciter field.
- Voltage regulation of  $\pm 1.0\%$  no load to full load.

### Full Load Acceptance

- Accepts 100% of standby nameplate rating in one step, in compliance with NFPA, para 5-13.2.6.

### Cooling System

- Closed circuit, pressurized system with ambient temperature rating of 40°C (113°F).

### Generator Control Panel

- MEC 310™ microprocessor-based, digital control panel; vibration isolated and NFPA 110 compliant.
- Liquid crystal display screen with alpha-numeric readout for display and programming.
- Self-diagnostic feature continuously verifies processing, memory circuits and input/output.

### Skid and Housing

- Generator available as open skid-mount or outdoor housing design.
- Optional weather-protective or sound-attenuated housings.
- Integral vibration isolators.
- Steel battery rack and battery cables.

### Warranty

- Engine-generator sets are covered by an express written 2-year/2000 hour (whichever occurs first) limited warranty.

### Agency Approval

- UL 2200 certification.



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<b>Alternator Specifications</b>	<b>Standard 3-Phase Generator</b>	<b>Optional Full Output 1-Phase Generator</b>
Manufacturer/Model	Marathon MagnaPlus 284CSL1542	Marathon MagnaPlus 285PSL1750
Type	4-Pole, Rotating Field	4-Pole, Rotating Field
Exciter Type	Brushless, Shunt Excitation Design	Brushless, Shunt Excitation Design
Number of Leads	12 Lead, Broad Range, Reconnectable	4 Lead
Voltage Regulator	SE350, Solid State, Volts-per-Hertz	SE350, Solid State, Volts-per-Hertz
Insulation	NEMA MG1-1.66	NEMA MG1-1.66
Material	Class H	Class H
Temperature Rise	125°C, Standby Rating	125°C, Standby Rating
Bearing, Type	Single, Sealed	Single, Sealed
Coupling	Flexible Disk Type	Flexible Disk Type
Cooling Air Volume	250 cfm (7.1 m <sup>3</sup> /min.)	250 cfm (7.1 m <sup>3</sup> /min.)
Amortisseur Windings	Full	Full
Voltage Regulation (no load to full load)	±1%	±1%
Single Step Load Acceptance per NFPA 110	100% of Rating	100% of Rating

## Engine Specifications

Manufacturer/Model	General Motors/Vortec 4300™
Type	4-cycle, water cooled, Natural aspiration
Cylinder Arrangement	V 6
Displacement	262 in <sup>3</sup> (4.3 L)
Bore	4 in. (101.6 mm)
Stroke	3.48 in. (88.4 mm)
Compression Ratio	9.05 : 1
Cylinder Block	Cast Iron
Cylinder Head	Cast iron
Crankshaft	Nodular cast iron
Brake Mean Effective Pressure (BMEP)	127 psi (875 kPa)
Rated RPM	1800 RPM
Max. Power @ Rated RPM	65 hp (40 kW)
Governor Type	Electronic
Frequency Regulation: no load to full load	8% under varying loads from no load to 100% rated load.
Frequency Regulation: Steady State	±0.5% of mean value for constant loads from no load to full load.
Air Cleaner Type	Dry

### Rating Guidelines

STANDBY POWER: Rating corresponds to ISO Standard Fuel Stop Power. It is applicable for supplying standby electrical power at variable load in areas with well established electrical networks in the event of normal utility power failure. No overload capability is available for this rating.

SINGLE PHASE OUTPUT: Broad range alternators can supply single phase output up to 2/3 set rated 3-phase kW at 1.0 P.F. Refer to Amperage chart.

## Amperage

Voltage	Phase	Wire	Amperage
120/208 Volt	3	4	156
120/240 Volt	3	4	135
277/480 Volt	3	4	68
120/240 Volt Full Output	1	3	188

## Lubrication System

Type	Gear Driven
Oil Capacity-With Filter	1.3 gal (5.7 L)
Oil Filter	Full Flow, bypass if plugged
Oil Pressure At Rated Speed	40-45 psi
Maximum Oil Temperature	260°F (127°C)

## Engine Electrical System

Battery Charging Alternator - Make	Remy
Ground Type	Negative
Volts (DC)	12 VDC
Ampere Rating	70 A
Starter Motor Make/Model	GM/Delco
Starter Motor Rated Voltage	12 VDC
Starter Motor Battery Capacity	450 A



# 45kW Natural Gas On-Site Power Industrial Generator

## Cooling System

Exhaust Manifold Type	Dry
Radiator Design	Standard horizontal discharge
Ambient Temperature Rating	122°F (50°F)
Coolant Capacity	4.5 gal (17.0 L)
Water Pump Design/Type	Belt driven, Centrifugal vane
Coolant Flow	32.6 gal/min (123 L/min)
Radiator Cooling Air	3870 cfm (109 m <sup>3</sup> /min)
Heat Rejection From Engine	1430 Btu/min (25.13 kW)
Heat Rejection To Coolant	2182 Btu/min (38.34 kW)
Fan Diameter	19 in. (482 mm)
Fan Horsepower	2.25 hp (1.7 kW)
High Water Temperature Indication	230°F (110°C)

## Fuel System

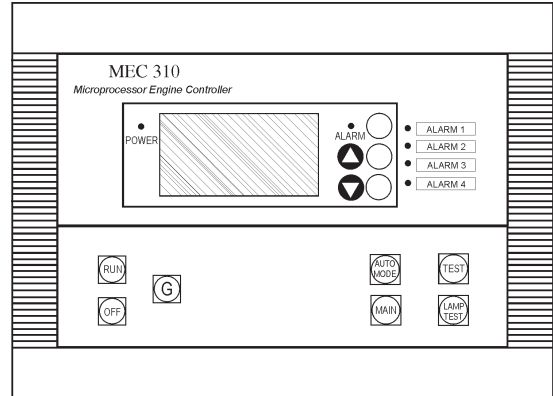
Fuel Type	Pipeline Natural Gas	Liquid Propane
Fuel Supply Line Inlet	3/4" pipe, 1.0" hose	1/4" NPT 3/8 hose
Fuel Supply Pressure	4-6 in/H <sup>2</sup> O	250 psi
Fuel Consumption at % Rated of Load		
100%	552 cf/hr	6.03 g/hr
75%	414 cf/hr	4.50 g/hr
50%	276 cf/hr	3.00 g/hr
25%	138 cf/hr	1.50 g/hr

## Exhaust System

Exhaust Flow at Rated kW	341 cfm (9.6 m <sup>3</sup> /min)
Exhaust Temperature at Rated kW	1292°F (700°C)
Maximum Allowable Backpressure	50 in/H <sup>2</sup> O (12.5 kPa)
Heat Rejection To Exhaust	4469 Btu/min (78.5 kW)

## Derating Factors

Derating Factors	Altitude
The engine may be operated up to 1000 ft. without derating. For operation at higher altitudes the power should be derated according to the following factors:	3.3% per 1000 ft.



## GENERATOR CONTROLLER

- MEC 310™ microprocessor-based digital generator controller.
- Meets all NFPA 110 requirements for emergency power systems Level I installations.
- High visibility graphical display screen with alpha-numeric readout.
- Self diagnostic features continuously verify processing, input/output and memory circuits.
- Digital 3-phase Power Metering including kW, kVAR, kVA power factor, kWhr and kVARhr for generator supply.
- RS485 Remote communication port available with Modbus™.
- Certified to UL508 and CSA 22.2 #14 Industrial Control Equipment Standards.

## Standard Controller Features

### AC Metering Display:

- Voltage/Amperage/Frequency
- Generator Phase Voltage/Current
- Generator Frequency

### Engine Control & Monitoring:

- LCD Operator Interface Display
- Auto Start Control

### Engine Parameter Display:

- Switch Not In Auto
- Low Fuel Level
- Oil Pressure
- Engine Temperature
- Battery Voltage/Condition
- RPM
- Fuel Level

### Digital Fault Alarm/Shutdown Display:

- Overvoltage
- Emergency Stop
- Loss Of Speed
- Overcrank
- Overspeed Alarm
- Low Oil Pressure Alarm
- High Engine Temperature
- Low Coolant Level
- Dedicated Output Contacts:
  - 8A
  - Normally Open Crank
  - Fuel (Run)

### Configurable Set Points/Time Delays:

- Engine Start
- Crank
- Rest
- Cool down
- Oil bypass

### Standard 30 Event Log:

- Time/Date Stamp Capability
- Real Time Clock
- Battery Backup

### Protective Relaying:

- IEEE/ANSI (27/59) Over/under voltage
- (81 o/u) Overunder frequency
- Reverse Power
- (51) Time-overcurrent Protection

### Communication Interface Ports:

- CANbus communication port
- RJ11 port for PC interface

### Optional Features

- J1939 CANbus engine communications port
- MODBUS™ - RS485 Remote Communication port
- Automatic Mains Failure control
- Expansion Alarm Remote Annunciator (EAP 300)
- Service Setup Port (SSP 300)



# 45kW Natural Gas On-Site Power Industrial Generator

## Generator Set Options

### Alternator

- Full output 1 Phase Alternator
- Generator Strip Heater
- Permanent Magnet Generator (PMG)

### Control Panel

- Remote Monitoring and Generator Network Communications Link
- Voltage Adjusting Rheostat

### Cooling System

- Coolant Heater
- Radiator Duct Flange

### Engine

- Engine Crankcase Ventilation Filter

### Enclosed Unit

- Outdoor Weather-protective Housing
- Outdoor Sound-Attenuated Housing
- Critical Grade Exhaust Silencer
- Exhaust Mounting Package
- Rain Cap

### Open Unit

- Critical Exhaust Silencer
- Exhaust Mounting Package

### Electrical System

- Battery
- Environmental Plastic Battery Box
- Battery Charger, Equalize/Float Type 3.5 Amperes
- Battery Charger w/Alarms, Equalize/Float Type, 10 Amperes

### Fuel System

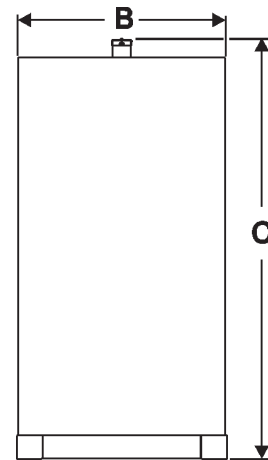
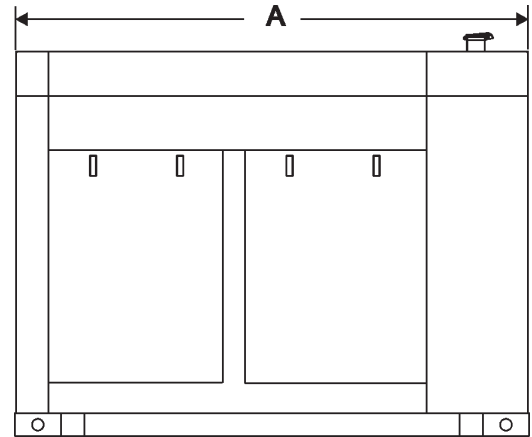
- LPG - Liquid Withdrawal
- LPG - Vapor Withdrawal

### Automatic Transfer Switch

- Amperage \_\_\_\_\_
- No. Poles \_\_\_\_\_
- Type Enclosure \_\_\_\_\_
- Options \_\_\_\_\_

### Miscellaneous

- Main Line Circuit Breaker
  - 120/208 Volt, 3 Phase, 3 Pole
  - 120/240 Volt, 3 Phase, Delta, 3 Pole
  - 139/240 Volt, 3 Phase, 3 Pole
  - 277/480 Volt, 3 Phase, 3 Pole
  - 120/240 Volt, 1 Phase, 2 Pole
- Main Line Circuit Breaker Options
  - Auxiliary Contacts
  - DC Shunt Trip
- Remote Annunciator Panel
- Remote Emergency Stop Kit
- Vibration Isolators, Spring Type



## Weights and Dimensions

Housing Options	A	B	C
<b>Open</b>	84 in. (2,133 mm)	34 in. (863 mm)	43 in. (1,092 mm)
Weight	1,185 lbs (537.5 kg)		
<b>Standard</b>	84 in. (2,133 mm)	34 in. (863 mm)	66 in. (1,676 mm)
Weight	1,612 lbs (731 kg)		
<b>Sound Attenuated</b>	84 in. (2,133 mm)	34 in. (863 mm)	66 in. (1,676 mm)
Weight	1,665 lbs (755 kg)		

Weights are based on dry gensets with standard equipment. The total weight may vary according to fluid additions and/or optional equipment ordered with the unit.

Backfeed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device. Specifications are subject to change without notice.

Your MQ Power dealer is:



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