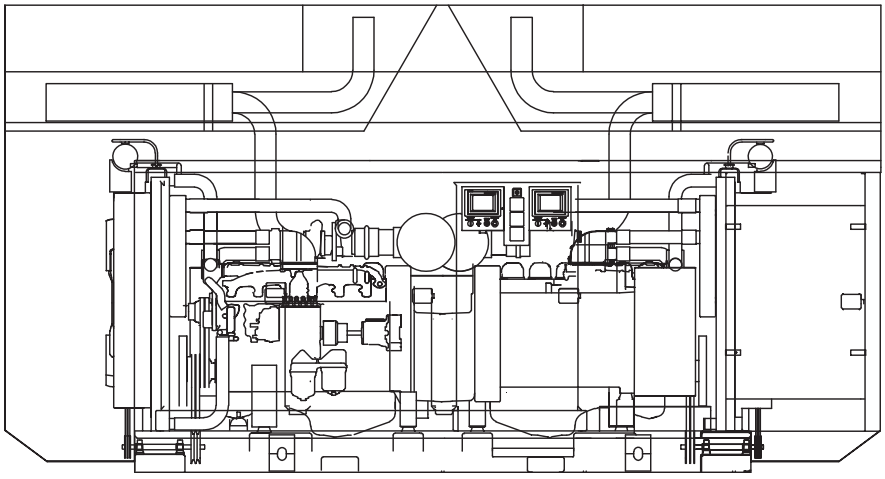
MD750 - GEM

For Generac Modular Power System (MPS)

Standby Power Rating

750KW 60 Hz

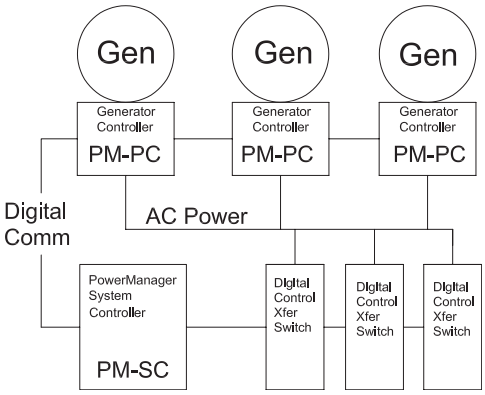


Power Matched

GENERAC 12.0DTA ENGINES

Turbocharged / Aftercooled

PowerManager® Digital Control Platform



FEATURES

GEMINI DUAL POWER MODULES:

- Twin 12 liter diesel 6 cylinder engines coupled with two 375 kW alternators with permanent magnet excitation on a single base.
- The two units are connected to a common generator bus through a switching mechanism to parallel to each other for combined power output.
- **POWERMANAGER® DIGITAL CONTROL PLATFORM.** The PowerManager® Digital Control Platform (PM-DCP) is a powerful control system built around a 32 bit industrial microprocessor. Standard factory programming controls the entire engine generator system while allowing the PM-DCP, with its onboard PLC, to be customized to meet any application requirement. The system is available on single diesel installations as well as Modular Paralleling Systems (MPS) from 750 kW - 3750 kW.
- **SINGLE SOURCE SERVICE RESPONSE** from Generac's dealer network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component. You are never on your own when you own a GENERAC POWER SYSTEM.
- **ECONOMICAL DIESEL POWER.** Low cost operation due to modern diesel engine technology. Better fuel utilization plus lower cost per gallon provide real savings.
- **LONGER ENGINE LIFE.** Generac heavy-duty diesels provide long and reliable operating life.
- **GENERAC TRANSFER SWITCHES, POWERMANAGER® AND ACCESSORIES.** Long life and reliability is synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is that the GENERAC product line includes its own transfer systems, accessories, and PowerManager® controls for total system compatibility.
- **UL2200 LISTING AVAILABLE**

GENERAC®

APPLICATION & ENGINEERING DATA

GEM750

GENERATOR SPECIFICATIONS (EACH GENERATOR)

TYPE ..... Four Pole Revolving Field
ROTOR INSULATION ..... Class H
STATOR INSULATION ..... Class H
ADDITIONAL INSULATION ..... Fungus Resistant Coating
TOTAL HARMONIC DISTORTION ..... <5%
TELEPHONE INTERFERENCE FACTOR ..... <50
BEARINGS ..... Prelubed and Sealed
COUPLING ..... Geardrive
LOAD CAPACITY (STANDBY) 100%
EXCITATION SYSTEM ..... Permanent Magnet with Wound Field
TEMPERATURE RISE ..... 125°C
WINDING PITCH ..... 2/3 (skewed)
ROTOR ..... Dynamically Balanced (2 planes)

VOLTAGE REGULATOR

REGULATION ..... Digital ± 0.25%
SENSING ..... 3 Phase
OPERATION ..... Digital
PARALLELING CAPABILITY ..... Yes

CONTROL PANEL

PM-PC ..... PowerManager Generator Control
TOUCH SCREEN DISPLAY
- AC VOLTS ..... L/L L/N
- AC AMPS ..... Per Line
- FREQUENCY ..... 10-99 Hertz
- OIL PRESSURE ..... Digital LCD
- COOLANT TEMPERATURE ..... Digital LCD
- FUEL LEVEL ..... Digital LCD
- DC BATTERY VOLTAGE ..... Digital LCD
- RUN TIME HOURS ..... Digital LCD
- ENGINE SPEED ..... Digital LCD
  - Generator Power (kW) ..... Digital LCD
  - Power Factor ..... Digital LCD
  - Panel Power ..... LED
  - Not In Auto ..... LED
  - Common Alarm ..... Flashing LED
  - Generator Alarm ..... LED
- CONTROLS
  - Emergency Stop ..... Push Button
  - Auto-Off-Manual Switch ..... Keyed
- ALARMS
  - High/Low Voltage ..... Panel Display
  - High/Low Battery Voltage ..... Panel Display
  - High/Low Frequency ..... Panel Display
  - Low Oil Pressure & Prealarm ..... Panel Display
  - High Oil Water & Prealarm ..... Panel Display
  - High, Low & Critical Fuel Levels
  - Overcrank
  - Sensor Failure – Oil Pressure, Temperature, RPM Oil Temp.
  - Transfer Switch Fault, Internal Comm Fault
- Communication
  - Serial Communication RS232 and RS485

INTERNAL DUAL CONTACTOR

RATING ..... 600 Amp
INTERRUPT RATING ..... 42,000 Amp
TYPE ..... Single
Mechanism is 3 pole, solenoid actuated with separate inputs from each generator to a single output.
ACCESSIBILITY ..... Contacts are viewable without disassembly

PARALLELING CONTROLLER (PM-DCP)

DEVICES REQUIRED (STD) ..... Generac PowerManager
PARALLELING TIME .... Variable (Consult Factory for Specific Application)
PROTECTIVE DEVICES
- Over/Under Voltage
- Over/Under Frequency
- Reverse Current
- Unequal Load Share

ENGINE SPECIFICATIONS (EACH ENGINE)

MAKE ..... Generac
MODEL ..... 12.0 DTA
CYLINDERS ..... 6 in-line
DISPLACEMENT - liter (cu. in.) 11.9 (729)
BORE - mm (in.) 130 (5.11)
STROKE - mm (in.) 150 (5.91)
ASPIRATION ..... Turbocharged and Aftercooled
COMPRESSION RATIO 15.5:1
LIFTER TYPE ..... Solid
VALVES ..... Stellite Faced Heat Resistant Steel
CRANKSHAFT ..... Case Hardened, Die Forged
CONNECTING RODS ..... Forged 4140
CYLINDER BLOCK ..... Cast Iron
CYLINDER HEAD ..... Individual, Overhead Valve, Cast Iron
STARTING MOTOR ..... 24 Volt DC
BATTERY CHARGING ALTERNATOR ..... 35 Amp 24 V
BATTERIES ..... (2) - 12V, 700 CCA, 27F
GROUND POLARITY ..... Negative
FUEL ..... #2D (Min. Cetane #40)
FUEL SYSTEM ..... Zexel (Bosch)
GOVERNOR ..... Isochronous
AIR CLEANER ..... Dry
TYPE OF OIL PUMP ..... Gear
LUBE OIL CAPACITY ..... 8.2 Gallons
LUBE OIL FILTERS ..... full flow and bypass
COOLING SYSTEM ..... Pressurized, Closed Recovery
WATER PUMP ..... Pre-lubed, Self sealing
TYPE OF FAN ..... Puller
FAN DIAMETER - mm (in.) 991 (39)
COOLANT HEATER ..... 240 V, 2000 W
EXHAUST SYSTEM ..... Single Muffler per engine
- Muffler ..... Critical Grade
- Inlet Diameter ..... 5"
- Exhaust Stack Diameter ..... 5"

Rating definitions - Standby: Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. (All ratings in accordance with BS5514, ISO3046 and DIN6271.) Prime power is not available at this time for Gemini units.

GENERAC®

GEM750

OPERATING DATA

	STANDBY
	GEM750
GENERATOR OUTPUT VOLTAGE/KW—60Hz	**kW** / **Rated AMP**
277/480V, 3-phase, 0.8 pf (NOTE: Consult your Generac dealer for additional voltages.)	750 / 1128
600V, 3-phase, 0.8 pf	750 / 902
GENERATOR PARAMETERS	
Subtransient Reactance	0.12 pu.
Transient Reactance	0.13 pu.
Synchronous Reactance	2.98 pu.
MOTOR STARTING TOTAL	
Locked rotor kva at	**277/480**
Instantaneous voltage dip 60 Hz	
10%	800
20%	1500
30%	2420
35%	2820
FUEL	
Fuel consumption	**% Load** / **gal./hr.**
25	18.0
50	34.0
75	48.8
100	63.0
Fuel pump lift in.	40
COOLING (EACH ENGINE)	
Coolant capacity System - lit.(gal.)	83.3 (22.0)
Coolant flow/min. 60 Hz - lit.(gal.)	223 (59)
Heat rejection to coolant BTU/hr.	1,265,000
Radiator air flow 60 Hz - m^3/min. (cfm)	991 (35,000)
Max. operating air temp. onto radiator °C (°F)	60 (140) *see note
Max. operating ambient temp. °C (°F)	50 (122) *see note
Max. external pressure drop after radiator in. H_2O	0.5
COMBUSTION AIR REQUIREMENTS (EACH ENGINE)	
Flow at rated power 60 Hz - m^3/min. (cfm)	35.6 (1257)
EXHAUST (EACH ENGINE)	
Exhaust flow at rated output 60 Hz - m^3/min. (cfm)	120 (4237)
Maximum recommended back pressure kPa ("Hg)	5.1 (1.5)
Exhaust temperature at rated output (pre-turbo) °C (°F)	732 (1350)
Exhaust outlet size	5"
ENGINE (INDIVIDUAL)	
Rated RPM 60 Hz	2280
HP at rated kWe (gross) 60 Hz	555
Piston speed 60 Hz - m/sec. (ft./min)	11.4 (2249)
BMEP 60 Hz - psi	264
POWER ADJUSTMENT FOR AMBIENT CONDITIONS	
Temperature °C	25 30 35 40 45 50
°F	77 86 95 104 113 122
Rating – kW	750 750 750 750 700 648
Altitude -0.8% for every 100 m above - m	1066
-2.5% for every 1000 ft. above - ft.	3500

*Note: Values given are maximum temperatures to which power rating adjustments can be applied. Consult your Generac representative if operating conditions exceed these maximums.

SYSTEM DESCRIPTION

The Gemini system consists of twin 375 kW gensets mounted on a common baseframe within a single, patented sound-attenuated enclosure. The two generators are paralleled to a common generator bus through a unit-mounted switching mechanism to provide 750 kW of total power output. The control system consists of the PowerManager™ System Controller (PM-SC) along with a PowerManager Paralleling Controller (PM-PC) for each 375 kW genset. The PM-SC is provided in a separate NEMA 1 wall-mount enclosure. It interfaces with the two generator controllers to provide start-stop commands based on utility power, proportional load sharing and safe paralleling of each unit to the common generator bus.

The PowerManager control system, including generator controllers, can be locally or remotely viewed and programmed via Generac GenLink® Communications Software. PowerManager also offers upstream digital communications via RS485/Modbus to other supervisory control systems.

TYPICAL OPERATIONAL SEQUENCE

1. A transfer switch in the PM-DCP configuration detects a utility failure and issues a start command. The command goes to the PM-SC which then issues a start command to the PM-PC's.
2. Each generator will start on its own.
3. The first generator that attains rated frequency and voltage is connected to the common generator bus via the switching mechanism.
4. The second generator will synchronize and close into the bus via the switching mechanism.
5. When both gensets are paralleled to the bus, the PM-SC will signal the transfer switches to transfer to the load. If multiple transfer switches are installed, the PM-SC will connect these switches in 3 separate programmed steps.
6. If an NFPA requirement for 10 second start exists, the first unit connects to the bus. This causes the controller in a separate emergency transfer switch to immediately transfer to the NFPA load.
7. If a single generator fails, load shed contacts are available to disconnect selected non critical loads.
8. If load conditions are reduced (night time operation), one generator can be programmed off line (optional).
9. When utility supply returns, the PM-SC will issue commands to transfer loads back to the utility. It then issues commands to the individual PM-PC's to disconnect from the bus. Each PM-PC will operate its generator for the cool-down period and then issue a shutdown command.

STANDARD FEATURES

GEM750

- 12 Liter 2300 RPM Diesel Engines
- 12 Lead 375 kW 60 Hz Generators
- Dual PM-PC Generator Controllers
- High Coolant Temperature Automatic Shutdown
- Low Coolant Level Automatic Shutdown
- Low Oil Pressure Automatic Shutdown
- Overspeed Automatic Shutdown
- Crank Limiter (Solid-state)
- Pre-alarms
- Emergency Stop Button
- Serial RS232 and RS485 Output
- Isochronous Governors
- 0.25% Digital Voltage Regulators
- Fuel Shut off Solenoid
- Primary Fuel Filters
- Factory Installed Cool-Flow Radiators
- 2000 Watt Coolant Heater Per Engine
- UV/Ozone Resistant Hoses
- Rubber-Booted Engine Electrical Connections
- 35 Amp DC Engine Driven Alternator Per Engine
- Air Cleaners
- Dual Oil Filters
- Vibration Isolators
- Oil and Antifreeze
- Critical Mufflers
- 10 Amp Battery Charger Per Engine
- Batteries (2 – 700 CCA, 27F Per Engine)
- Stainless Steel Flex Exhaust Connections
- Flex Fuel Lines
- 3 Sets of Owner's Manuals
- Mainline Circuit Breaker (One at each Generator)
- Two Year Warranty
- Sound Attenuated Weather Protective Enclosure
- Critical Grade Muffler (2)
- GenLink® Communications Software
- UL2200 Listed

POWERMANAGER® DIGITAL CONTROL PLATFORM

The PowerManager® Paralleling Controller (PM-PC) is a fully programmable, integrated digital generator control console, using a 32-bit industrial microprocessor to handle all the control, monitoring, input and output genset functions. The open architecture used allows customizing the control to meet any customer requirements, yet maintaining the simplicity of operating 'as is' with the factory default programming.
(see Generac bulletin #0168840SBY)

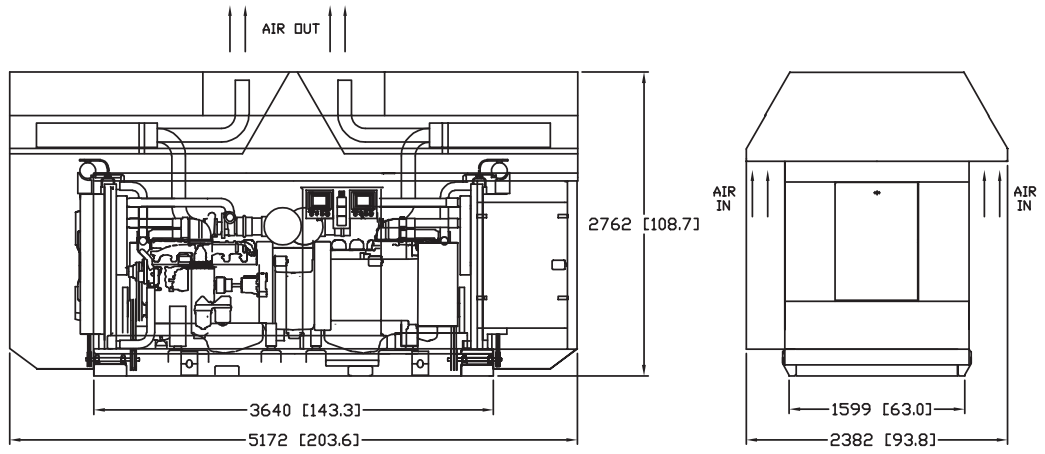
The PowerManager® Paralleling Controller (PM-SC) is a separate 32 bit processor that over sees the generator system. It signals the connected gensets to start and stop on power failures, signals transfer switches to acquire load in a prioritized sequence and initiates prioritized load shed if conditions warrant. It also handles proportional load sharing and is the portal for remote communications.

OPTIONS

- **OPTIONAL FUEL ACCESSORIES**
  - ❍ Secondary Fuel Filters and Heaters
  - ❍ UL Listed Double Wall Base Tanks
  - ❍ Base Tank Emergency Vent
- **OPTIONAL ELECTRICAL ACCESSORIES**
  - ❍ Battery Warmer
- **OPTIONAL ALTERNATOR ACCESSORIES**
  - ❍ Alternator Tropicalization
- **ADDITIONAL OPTIONAL EQUIPMENT**
  - ❍ 21 Light Remote Annunciator
  - ❍ Remote Relay Panel
  - ❍ 2 and 5 Year Extended Warranties

Distributed by:

Design and specifications subject to change without notice. Dimensions shown are approximate. Contact your Generac dealer for certified drawings. DO NOT USE THESE DIMENSIONS FOR INSTALLATION PURPOSES.



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Generac Power Systems, Inc. • S45 W29290 HWY. 59, Waukesha, WI 53189 • generac.com