POWERMANAGER®
System Controller (PM-SC)

Models

4975	PM-SC in NEMA 1 Enclosure
5039	PM-SC in NEMA 3R Enclosure
5047	PM-SC in NEMA 3R Enclosure with thermostatically controlled heater

PM-SC in NEMA 1 Enclosure

Features

As part of the PowerManager® Digital Control Platform, the PowerManager® System Controller (PM-SC) is a digital control box that acts as the master system coordinator for Generac's Modular Power System (MPS). The PM-SC provides a single point of remote communication to the system, facilitates the starting and stopping of the generators, helps fine-tune the generator load balancing, and manages priority loading and load shedding. The PM-SC utilizes an RS-485 data highway to communicate with each generator controller. The generator controller on each unit controls all generator operation incluing synchronizing and the primary load balancing functions. The role of the PM-SC is simply to facilitate normal system sequencing and data gathering.

After gathering information from each of the generator controllers, the PM-SC can easily provide generator information upstream to a building management system or to Generac's GenLink® operator interface software provided with the equipment. The PM-SC supports multiple communication ports utilizing Modbus protocol as well as a built-in modem.

The PM-SC can coordinate up to fifteen MPS generators and fully supports generators of different power outputs (load is shared proportonate to generator size). The PM-SC also supports single and multiple transfer configurations. The transfer switches can be from any manufacturer provided they utlize a standard two-wire start. The PM-SC supports load sequencing through three permissive and three load shed steps which can be used to sequence numerous load circuits.

The PM-SC is mounted in a NEMA 1 or NEMA 3R wall mounted enclosure and can be located anywhere within 3,000 feet of the generators, though it is often most convenient to locate it with the transfer switch equipment.

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System Functions

The PM-SC

- Accepts a 2-wire Start Signal from Multiple ATS's
- Starts and Stops Generators via RS485
- Fine-tunes the Real and Reactive Generator Load Sharing via RS-485
- Priority Loads the System (3 Levels)
- Load Sheds During Generator Failure (3 Levels)
- Central Point of Communication and Control
  - RS-232, RS-485 and Modem
  - Modbus Protocol and GenLink® Interface Software
- Supports a System Level Remote Annunciator and Common Alarm Output
- Supports Backup Modes of Operation
  - Human Interaction (Standard)
  - Redundant Controls (Optional)

Normal Sequence of Operation

1. The automatic transfer switches (ATS's) monitor the utility voltage and provides a 2-wire generator start contact to the PM-SC.
2. The PM-SC then provides a start command to all generators via RS-485 communications.
3. Each generator will start independently.
4. The first generator that attains rated voltage and frequency performs dead bus arbitration with the PM-SC and then closes its internal paralleling switch connecting to the generator bus.
5. If an emergency system load requiring a 10 second start exists, the first unit to close onto the generator bus will typically pick up the emergency ATS immediately.
6. During this time, the PM-SC inhibits the transfer of the other ATS's via permissive relays.
7. The reamaining generators will sync with the generator bus and close their individual paralleling switches.
8. As the generators are paralleled to the generator bus, the PM-SC sequentially signals the remaining ATS's to transfer onto the generator bus.
9. If a generator fails, load shed contacts are available to disconnect selected loads. Load shedding can be implemented at the transfer switches, with shunt trip breakers, through building automation, and by various other methods.
10. When utility supply returns, the ATS's remove the 2-wire start causing the PM-SC to issue a command to each generator control to disconnect from the generator bus.
11. Each generator will operate for the cool-down period and then shut down.

Key Features

- Controls up to 15 Paralleling Generators
- Touch Screen Display for Monitoring System and Individual Generator Status
- Diagnostics Capabilities at the Touch Screen and through GenLink® Software
- Data Logging and Trending Capabilities
- Real Time Clock and Calendar
- Programmable Exerciser
- Remote Monitoring using Modbus RTU Protocol or GenLink® Operator Interface Software
- Standard Internal Modem
- Priority Loading (3) and Load Shedding (3) Capability
- Programmable Spare I/O, 4 Auxiliary Inputs and 8 Auxiliary Outputs
- Integral Custom Logic Algorithm Allows Implementation of up to 47 Rungs of PLC Style Logic
- Three Position Key Switch for Operation Mode Selection (Auto/Off/Manual)
- Battery-backed DC Controls with AC Charger, Redundant 24VDC Input Available
- EEPROM Non-volatile Memory Assures Settings are Not Lost During Loss of Power
- Fuse-protected 120VAC GFI Convenience Duplex Receptacle (5A Max)
- UL 508 Listed

Optional and Backup Functionality

The MPS product line is designed to support operation even if a failure occurs to the PM-SC or to the RS-485 data highway. Standard backup mode allows human intervention to manually bring the generators on-line utilizing the capabilities built into the generator controllers. Load is then sequenced manually by actuating manual push buttons inside the PM-SC. An optional redundant load sequencing controller is available for sites which desire fully automatic backup operation.

In addition to basic functionality, the PM-SC is designed to fully integrate with Generac's MTS digital transfer switches or Generac's soft load transfer switch controller. The PM-SC also supports integration of other optional functionality like generator capacity management and site-specific custom logic.

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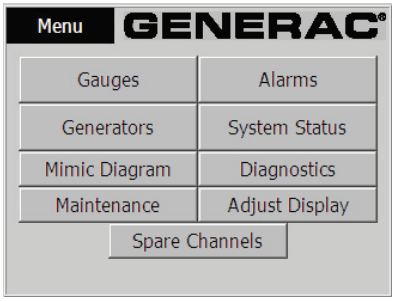
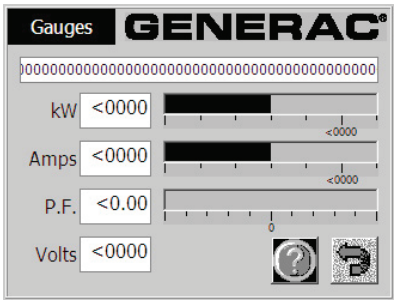
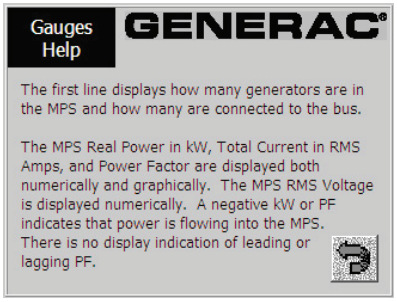
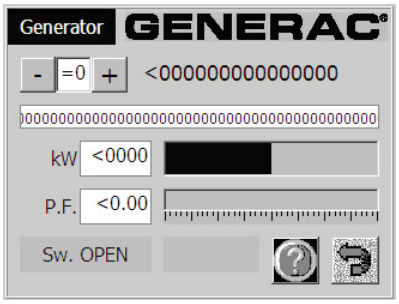
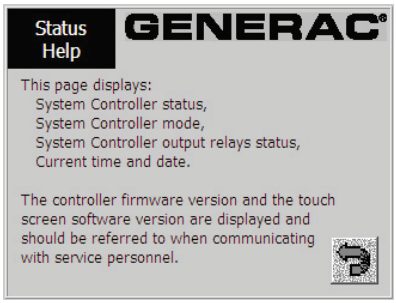
Typical Screens from Touch Screen Panel











Operating Specifications

External Power
- Supply Requirement ..... 120VAC Single Phase
- Internal Power 24VDC

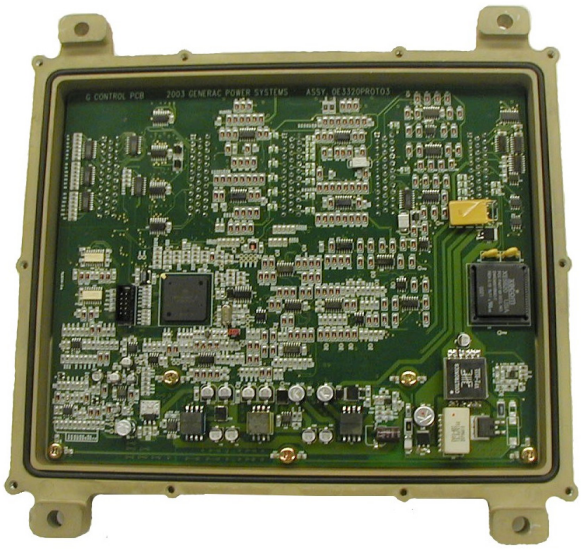
Output Ratings
- Relay Contacts 250VAC, 28VDC, 10A
- Open Collector User Outputs 30V, 200mA

Environmental
- Temperature ..... 10° to 50°C
- Humidity ..... 0 to 95% Non-condensing

Packaging and Mounting
- Enclosure Types Available ..... NEMA 1 or NEMA 3R
- Mounting ..... Wall Mount
- Weight ..... 90 lbs
- Dimensions ..... 30" H x 24" W x 9" D
- Finish ..... Generac Gray RhinoCoat™

Main Processor Assembly

- Factory Sealed in a Die Cast Aluminum Tamper Resistant Enclosure
- No Internal Adjustments or Controls
- Watertight Output and Input Connections
- 5 - 30 V Input Power
- Motorola 32-bit Processor
- Built-in Protection from Voltage Spikes
- Built-in Diagnostics
- -40° to +70°C Temperature Range
- Multi-layer Circuit Board Technology with Surface Mount Components
- Plug-in/Plug-out Design



Shown with Cover Removed (Back Side)

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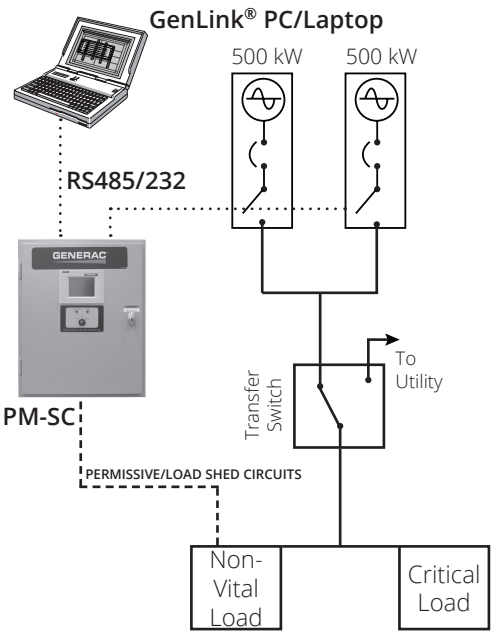
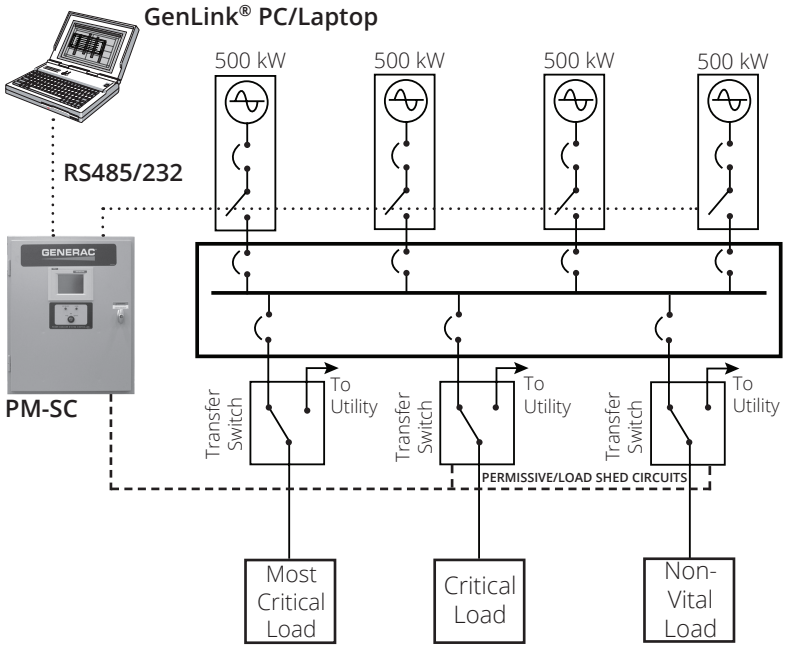
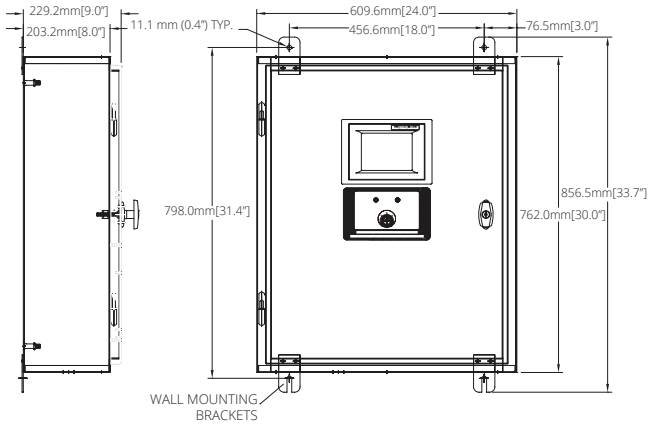
Single Transfer Switch Configuration

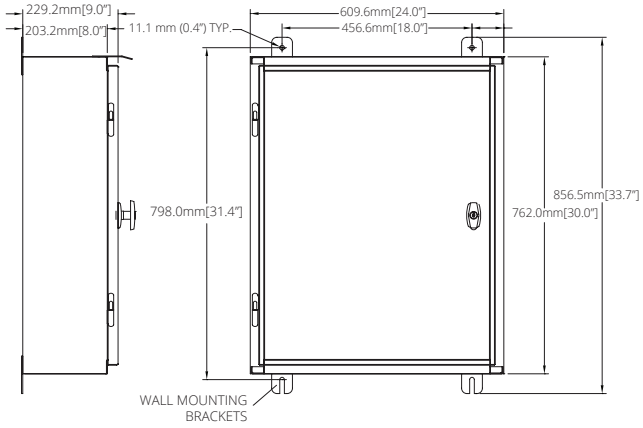


Multiple Transfer Switch Configuration





PM-SC in NEMA 1 Enclosure



PM-SC in NEMA 3R Enclosure

See Installation Drawings for Details

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