



ADVANCED POWER
TECHNOLOGIES

208V-480V Generator Output & Fire Pump Protection Distribution Panel



GM-Series Low Voltage Switchboard & Switchgear Solutions Brochure

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**SAFE SMART SERVICEABLE SWITCHGEAR &
ENGINEERED POWER SYSTEM SOLUTIONS**



ALN: 529 Rev. 01

Generator Output Protection



Figure 1: 1 MW, 480V, 1600A Generator Disconnect & Output Protection Molded Case Circuit Breaker with Front Removable Sheets



Figure 2: 3000A Dead Front Removed with Top Rear Cable Entry Side View



Figure 3: Partitioned with Two 1600A Insulated Case Circuit Breakers Panel

Gen Mounted Output, Distribution, & Fire Pump Protection

- ⊙ Application Voltages:
 - 480V, 600V, 120V/208V (3Ø)
 - 120V/240V (2Ø)
- ⊙ Cable Connections from Generator:
 - (>1200A) NEMA standard hole pattern
 - (≥1200A) circuit breaker lug terminations
- ⊙ Installation Location & Enclosure
 - Carbon Steel NEMA 1 Generator/Wall-Mountable
 - Painted ANSI 61 Gray or a variety of customer specified colors to match your genset
 - Screw Removable Front Panel allows circuit breaker bus and lug access
 - Your choice of cable entrance/exit locations
- ⊙ Your Choice of Circuit Breakers:
 - Molded Case Circuit Breakers:
 - UL® 489 Listed
 - Available up to 3000A
 - Manually Operated
 - Electrically Operated with Motor Operator Add-on
 - 80% or 100% Rated
 - Fixed Mounted, Drawout, or Plug-In
 - Interrupting Rating:
 - 18kA – 200kA @ 480V_{AC}
 - Insulated Case Circuit Breakers:
 - UL® 489 Listed
 - Available from 800A up to 1600A
 - Electrically or Manually Operated
 - 100% Rated
 - Fixed Mounted
 - Circuit Breaker Trip Units:
 - Thermal Magnetic
 - Basic Electronic
 - LI – Adjustable long time, instantaneous trip settings
 - LSI – Adjustable long & short time, instantaneous trip settings
 - LSIG – Adjustable long & short time, instantaneous trip settings, with ground fault trip settings
 - LSIA – Ground Fault Indication – Bell Alarm, No Trip
 - Breaker position Aux Contacts (“a” and “b”)
 - Shunt Trip
 - Time Delayed Trip
- ⊙ Neutral Landing Pad & Grounding Stud
- ⊙ Control Power
 - 12/24VDC from Engine starting batteries
 - 120VAC Customer Supplied

Distribution & Fire Pump Protection



Figure 4: Three Grouped MCCBs in a Single Enclosure

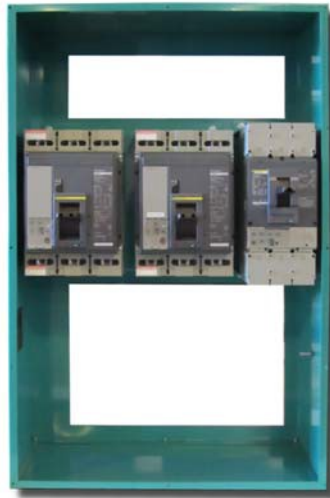


Figure 5: Three Grouped MCCBs in a Single Enclosure



Figure 6: Three Individually Isolated MCCBs in a Single Custom Color Enclosure

Generator Mountable

- ⦿ Each enclosure is manufactured to order based on the genset model & dimensions that it will be mounted to
- ⦿ Glastic or Metal Isolation Barriers Between Circuit Breakers Available Upon Request
- ⦿ NEC 695 Compliant Fire Pump Connection
 - Segregation & isolation from generator output/distribution protection circuit breakers
 - Fire pump overcurrent protection connected directly to the generator
- ⦿ Dimensionally, one (1) single enclosure accommodates:
 - Four (4) Up to 600A circuit breakers*
 - Two (2) >600A – 1200A circuit breakers*
 - One (1) >1200A – 3000A circuit breaker & one (1) up to 600A circuit breaker*
 - *Without Neutral Landing Lugs
- ⦿ Kirk Key Interlocking available to prevent inadvertent paralleling of two sources

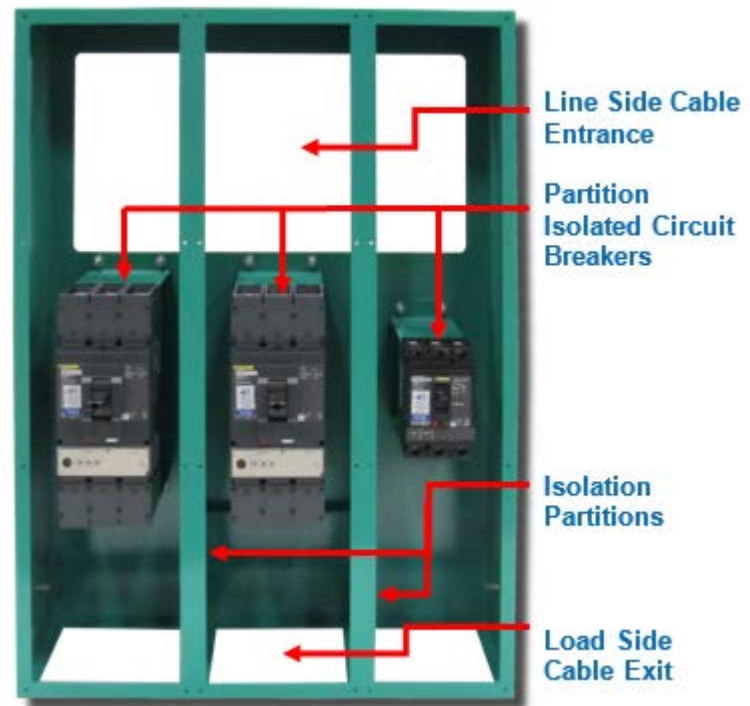


Figure 7: Three Individually Isolated MCCBs in a Single Enclosure with Dead Front Removed

Typical Enclosure Drawing

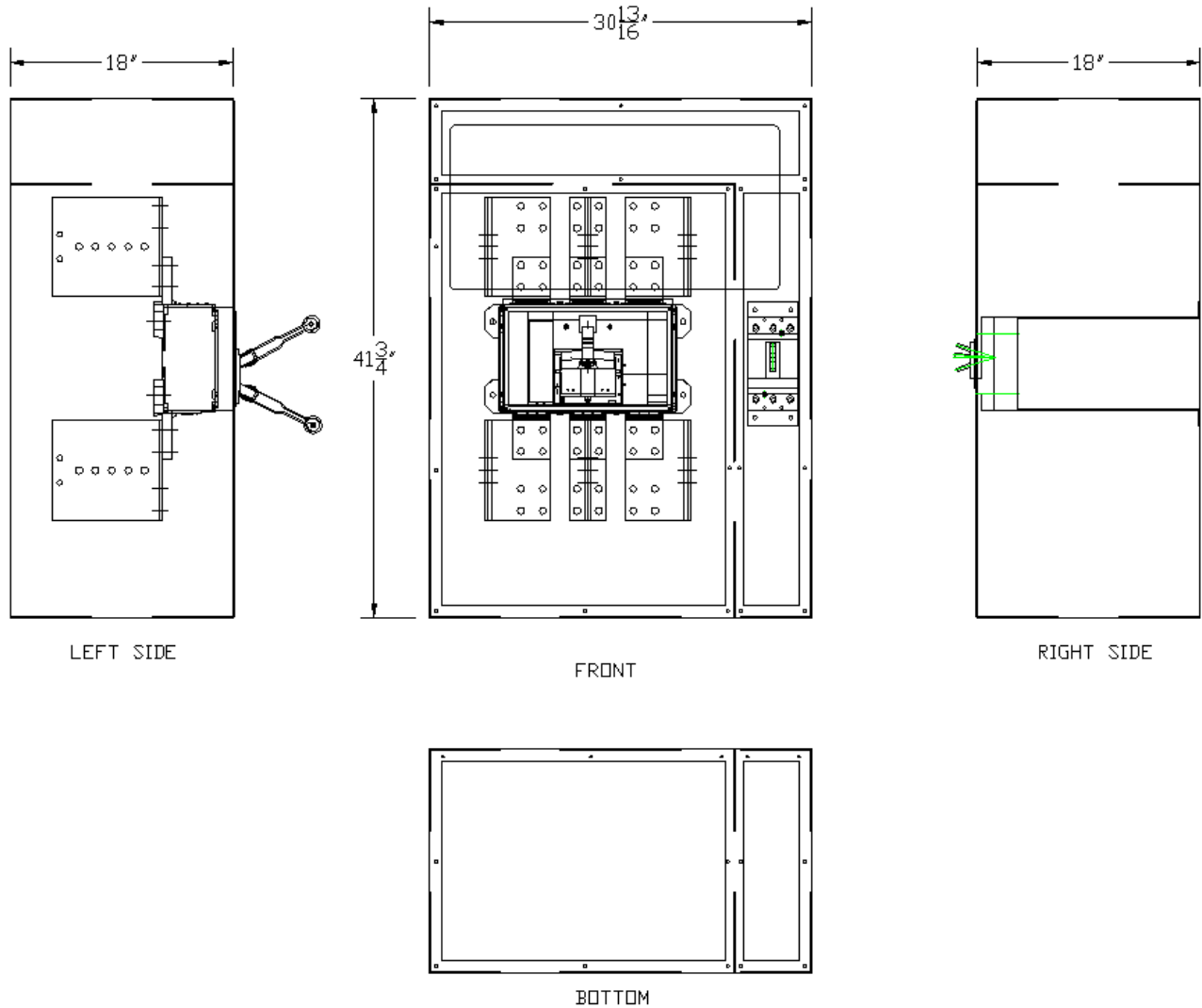


Figure 8: >1200A – 3000A Generator Output Protection Breaker with Segregated Fire Pump Circuit Breaker

Typical GM Applications

Power Distribution Only



Figure 9: Single Generator Disconnect & Output Protection

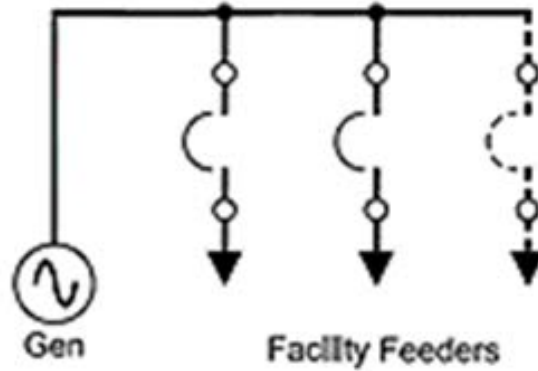


Figure 10: Single Generator Disconnect & Output Protection with Distribution Feeders

Power Distribution with Fire Pump Protection

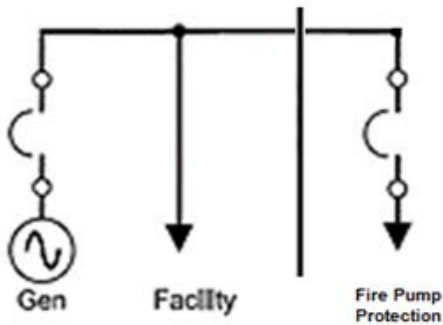


Figure 11: Single Generator Disconnect & Output Protection with Fire Pump Protection



Figure 12: Single Generator Disconnect/Output Protection with Distribution Feeders, & Fire Pump Protection

About Advanced Power Technologies



Advanced Power Technologies (APT) is on the cutting edge of the latest engineered power system smart technologies, as it relates to microgrid & storage management, renewable & conventional energy source deployment, demand peak shaving, and facility back-up and co-generation power systems. Located in the central United States and headquartered in Lafayette, Indiana with solutions development engineers around the country, APT provides domestic and international products and services to industry leading companies from around the world. APT engineers have decades of power system experience from working with some of the largest companies in industry. Over the last two decades, we have produced successful solutions for hundreds of large-scale electric power projects involving utility/generator paralleling, transfer, peak shaving, and distribution. We pride ourselves in providing electrical power systems that are engineered and custom built, utilizing state-of-the-art technologies to fit our customer's exact needs. The core of our business is low & medium voltage engineered power systems for a wide range of indoor & outdoor applications, such as:

- ⦿ Utility(ies) and Generator(s) Paralleling/Transfer/Peak Shaving/Distribution Switchgear
- ⦿ Microgrids, Microgrid Master Control Panels, SCADA systems
- ⦿ Containerized Battery Energy Storage Systems (BESS)
- ⦿ Photovoltaic (PV) Solar Power Collection/Distribution & Renewable Energy Storage Systems
- ⦿ Low & High Resistance Grounding Systems, Grounding Systems for Photovoltaic Effective Grounding
- ⦿ High Efficiency Combined Heat and Power Switchgear & Control Systems (CHP, Co-generation)
- ⦿ Outdoor Walk-In Electrical Houses (E-Houses) & Skid-Mounted Switchgear
- ⦿ Motor Control Centers & Motor Control Switchgear
- ⦿ Automatic & Manual Load Transfer Switchgear
- ⦿ Bypass/Isolation & Power Distribution Circuit Breaker Switchboards
- ⦿ Generator/Loadbank Quick Connection Switchgear, Switchboards, & Tap Boxes
- ⦿ Industrial Control Panels

Please see our product webpages on www.appt-power.com for product brochures and relevant information. Actual products may look different from images shown on the website and in brochures, based on actual specifications.

APT cares and understands that each power system is different. We will evaluate various solutions in order to develop the best solution for a site. APT focuses on our ability to a combine several traditional pieces of equipment/functionality into as little of a footprint possible. This saves on space, the cost of equipment, cost of installation, and accomplishes the most optimal/state-of-the-art design your facilities. APT's desires to foster and grow a culture of continued open communication with each customer. Let APT be your source to provide fully engineered power system equipment solutions for the full customer facility on time, on or under budget, and in the smallest footprint possible. We are always available to assist customers and engineers representing customers in the development of complex power solutions for all facility types.