APT
ADVANCED POWER TECHNOLOGIES

APT VIEW ENABLED

Multi-purpose Generator & Load Bank Quick Connection Switchboard Up to Three Source Transfer

PLT-Series
Generator/Load Bank Quick Connection
Solutions Brochure

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SAFE SMART SERVICEABLE SWITCHGEAR & ENGINEERED POWER SYSTEM SOLUTIONS

MADE IN THE USA

ALN: 516-PLT Rev. 01

Applications – Why This Switchboard?

Figure 1: Feature Diagram of PLT-Series Generator Load Bank Quick Connection Three Way Transfer Switchboard

208V-480V Portable Generator & Portable Load Bank Switchboard

- PLT-Series Switchboard eliminates introducing an additional point of failure to the utility power system for permanent generator connection
- It features a permanent switch between new & existing generator load bank temporary quick connection
- The PLT-Series allows quick and safe connection of a mobile generator set to facilities experiencing loss of power or temporary load bank for permanent generator testing for:
  - **Utilities**
    - Electric Supply Substations
    - Electric Substation Backup
    - Water Treatment Plants
    - Wastewater Treatment Plants
  - **Educational & Healthcare Institutions**
    - University Campuses
    - Hospitals – Medical Centers
    - Medical Clinics
  - **Government**
    - Federal, State, & Local Buildings
    - US Army & Navy Military Bases
    - Senior Centers
  - **Manufacturing & Industrial**
    - Textile Plants
    - Stamping Plants
    - Recycling Plants
  - **Technology**
    - Data Centers
  - **Transit**
    - Airports
  - **Renewable Energy Collection & Control**
    - Solar
    - Wind
    - Geothermal
    - Biogas
    - Hydropower

APT PLT-Series Construction

Figure 2: 1200A GLQC Switchboard with Permanent Generator, Temporary Generator, and Temporary Load Bank Quick Connection*

Figure 3: 1600A GLQC Switchboard with Utility Service Entrance, Permanent Generator and Temporary Load Bank Quick Connection*

800A-4000A Dual & Triple Purpose Quick Connection Switchboard

- Floor-Standing Switchboard
- UL 891 Listed
- System Ratings:
  - Voltage: 208V-480V (3Ø, 4W)
  - Current: 800A-4000A
  - Interrupting Rating: 65, 100 kAIC
- Temporary Generator Protection:
  - UL® 489 listed
  - Insulated Case Circuit Breaker
  - Fixed mount, or Draw-out Mount
  - Electronic trip unit with adjustable Long Time, Short Time, Instantaneous settings
  - 100% rated
  - Breaker Position Aux Contacts (“a” & “b”)
- Silver-plated copper phase bus bar for permanent connection to the facility
- APT Mechanical Lugs for permanent facility-side connections & Alternate Generator Connections
- Alternative bus bar connections with NEMA standard hole pattern and mechanical lugs for use in the event a mobile genset is used that does not have cables with ‘Cam-lok’ E1016 compatible plugs
- Spacious and easy access to color coded, generator (male) & load bank (female) E1016 cam-lok type receptacles with covers:
  - A phase – Brown (480V) / Black (208V)
  - B phase – Orange (480V) / Red (208V)
  - C phase – Yellow (480V) / Blue (208V)
  - Neutral – White
  - Ground – Green
- Standard Enclosure:
  - Filtered ventilation louvers
  - Pad-lockable hinged main access door
  - Pad-lockable integral lower flip door (allows the main door to be closed with the mobile generator/load bank cables connected)
  - Powder coated ANSI 61 Gray
  - NEMA 3R for outdoor applications
  - Permanent Connections: (Side/Rear/Bottom Exit)
  - Temporary Connections: (Lower Flip Door Entry)
  - Internal Climate Control to include (2) Space Heaters with a Thermostat - Requires customer supplied 120VAC, 10A circuit

*Due to continued product improvement, products delivered may differ from what is pictured.
*Optional Equipment Features Are Often Shown in Most Figures.
*Option Availability Subject to Product Series.

Switchboard Available Features

Fully Customizable

Figure 4: Male Cam-type Receptacles & Covers*

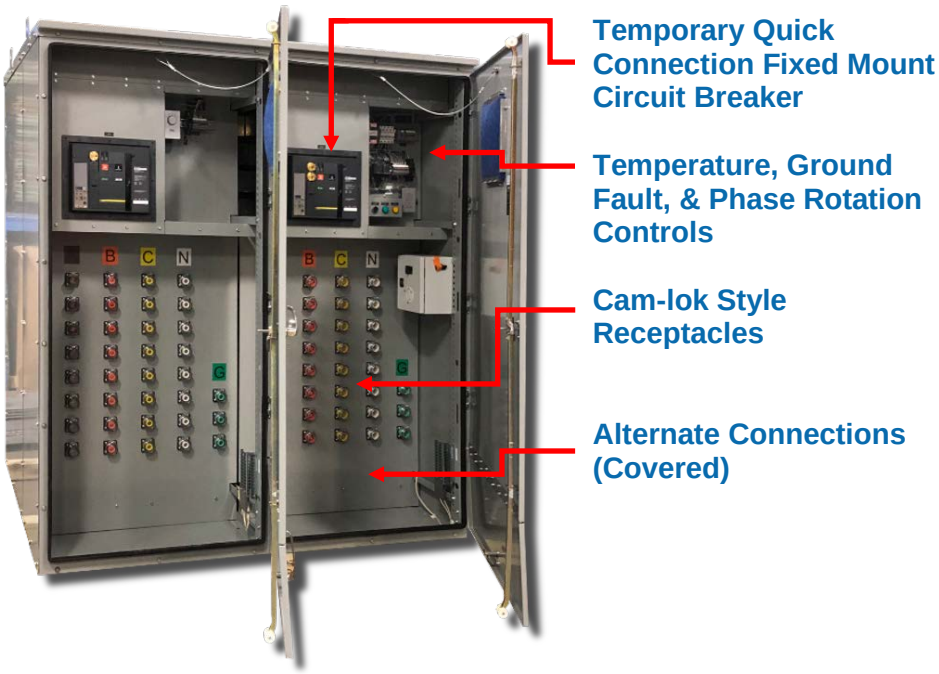

Figure 5: 3000A PLT-Series Dual Purpose Component Locations*

Interlocking, Monitoring, and Options

- Interlocking:
  - NEC 700.3 compliant key triple interlocking to prevent inadvertent paralleling of the temporary generator source with normal source(s)
- Phase Rotation Monitoring:
  - Provides visual assurance that mobile generator set phase rotation matches that of the facility
  - Configured to prevent circuit breaker from being closed if phase rotation is incorrect
  - Instructions to easily fix incorrect phase rotation are on a label inside each panel
- Ground Fault Monitoring:
  - Trips the circuit breaker on ground fault or provides alarm indication only
  - Configured at the factory per your order
  - Easily re-configurable in the field
- NEC 700.3 compliant temporary generator source connected indication
- Shunt Trip:
  - 120VAC for tripping circuit breaker if phase rotation is incorrect or ground fault logic is configured for tripping on ground fault sensing
- Enclosure options:
  - NEMA 1 for indoor installation
  - NEMA 3R for outdoor installation:
    - Type 304 Stainless Steel
    - Type 5052 Aluminum
  - Enclosure Climate Control:
    - Anti-condensation Heater w/ Thermostat & Humidistat
- Other Options
  - No Neutral Bus or Cam-loks
  - 100% Ground
  - Surge Protection Device (SPD)
  - Generator Remote Start/Stop Terminal Blocks
  - Generator Block Heater Receptacle
  - 480VAC or 240VAC Twist-lock Receptacle
  - 120VAC Battery Charger/Convenience Receptacle
  - Load Dump Receptacle/Terminal
  - Extra Large Enclosure for Conduit Entry/Exit
  - Custom Color
  - Convenience Light
  - SCADA Connection Interface

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Key Interlocking Configurations

Figure 6: 3000A Permanent to Temporary Generator Manual Transfer Switchboard*

Figure 7: 2500A Service Entrance Utility & Temporary Generator Quick Connection*

Figure 8: Auxiliary Feeder Section w/ Captive Key Transfer Block & Interlocks*

Utility, Permanent Generator Temporary Load Bank, Temporary Generator

- Scenario 1) Initial Conditions for Permanent Generator Use: The downstream Utility ATS shall be in the normal source connected position. The Temporary Generator cam-lok type receptacles access flip plate shall be locked. The Permanent Generator circuit breaker shall be closed. The Temporary Load Bank is not connected. Should the utility fail, the downstream Utility ATS shall switch to the emergency position and allow connection of the Permanent Generator circuit breaker to the facility.

- Scenario 2) Initial Conditions for Temporary Generator Use: The downstream Utility ATS shall be in the emergency source connected position. The Temporary Generator cam-lok type receptacles access flip plate shall be locked. The Permanent Generator circuit breaker shall be closed. The Temporary Load Bank is not connected. Should the Permanent Generator fail, the interlocking key shall be removed from the Permanent Generator circuit breaker (by others) to hold it in the 'Open' position and inserted into the Temporary Generator cam-lok type receptacles access flip plate to unlock and allow connection of the Temporary Generator to the facility in place of the Permanent Generator.

- Scenario 3) Initial Conditions Load Banking: The downstream Utility ATS shall be in the normal source connected position. The Temporary Generator cam-lok type receptacles access flip plate shall be locked. The Permanent Generator circuit breaker shall be closed. The Temporary Load Bank is not connected. The operator shall connect the Temporary Load Bank cables and start the Permanent Generator to allow connection of the Permanent Generator to the Temporary Load Bank.

- Scenario 4) Initial Conditions for Permanent Generator Use during Load banking: The downstream Utility ATS shall be in the normal source connected position. The Temporary Generator cam-lok type receptacles access flip plate shall be locked. The Permanent Generator circuit breaker shall be closed. The Temporary Load Bank is connected. Should the Utility fail during Load Banking, the Utility ATS shall switch to the emergency source connected position. The operator shall end the load test at the Load Bank and the Permanent Generator is connected to feed the facility.

*Subject to implemented options

Circuit Breaker Diagram & Ratings

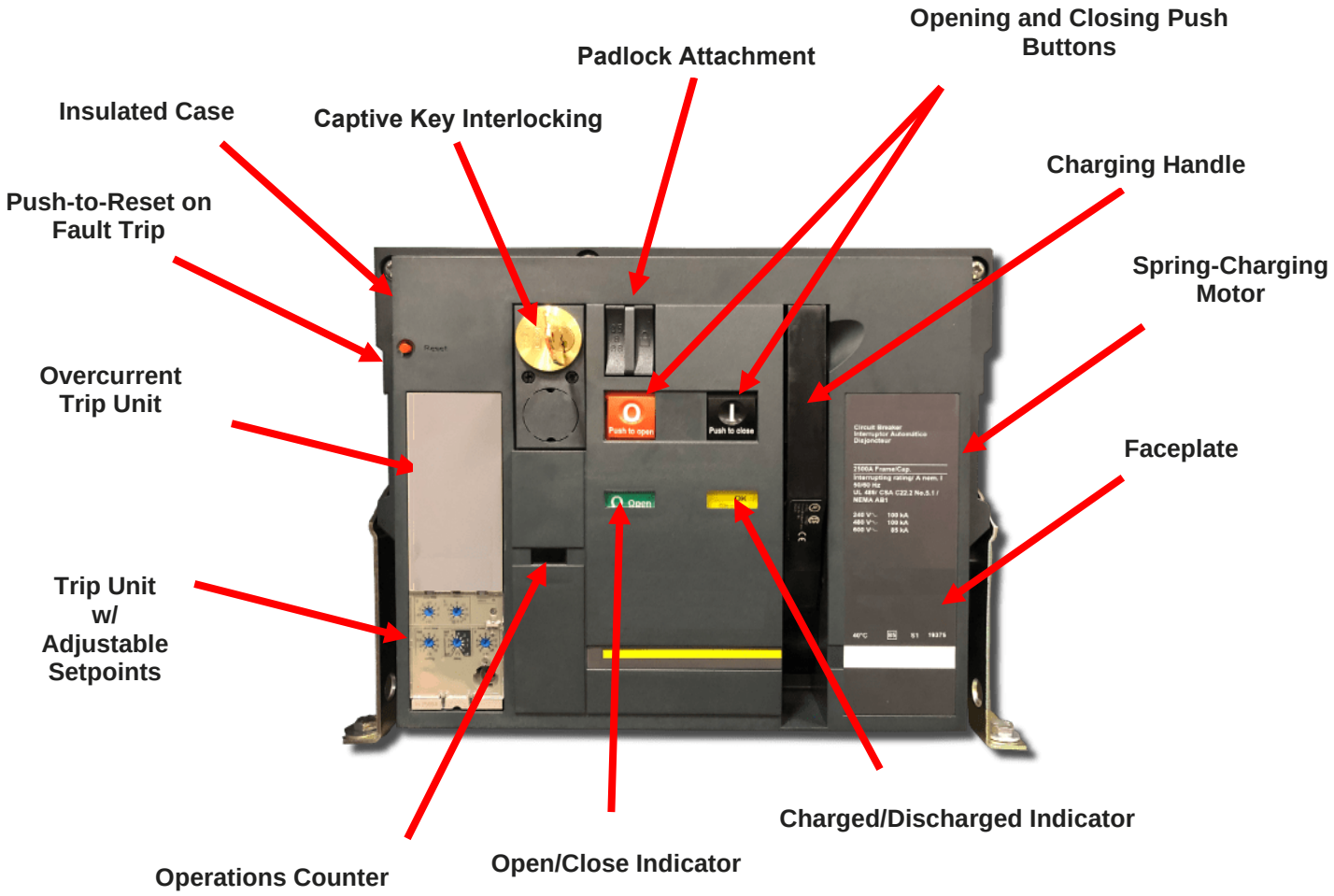

Figure 9: Insulated Case Utility, Temporary Generator, or Permanent Generator Circuit Breaker Features Front View*

GLQC Switchboard Drawing 1

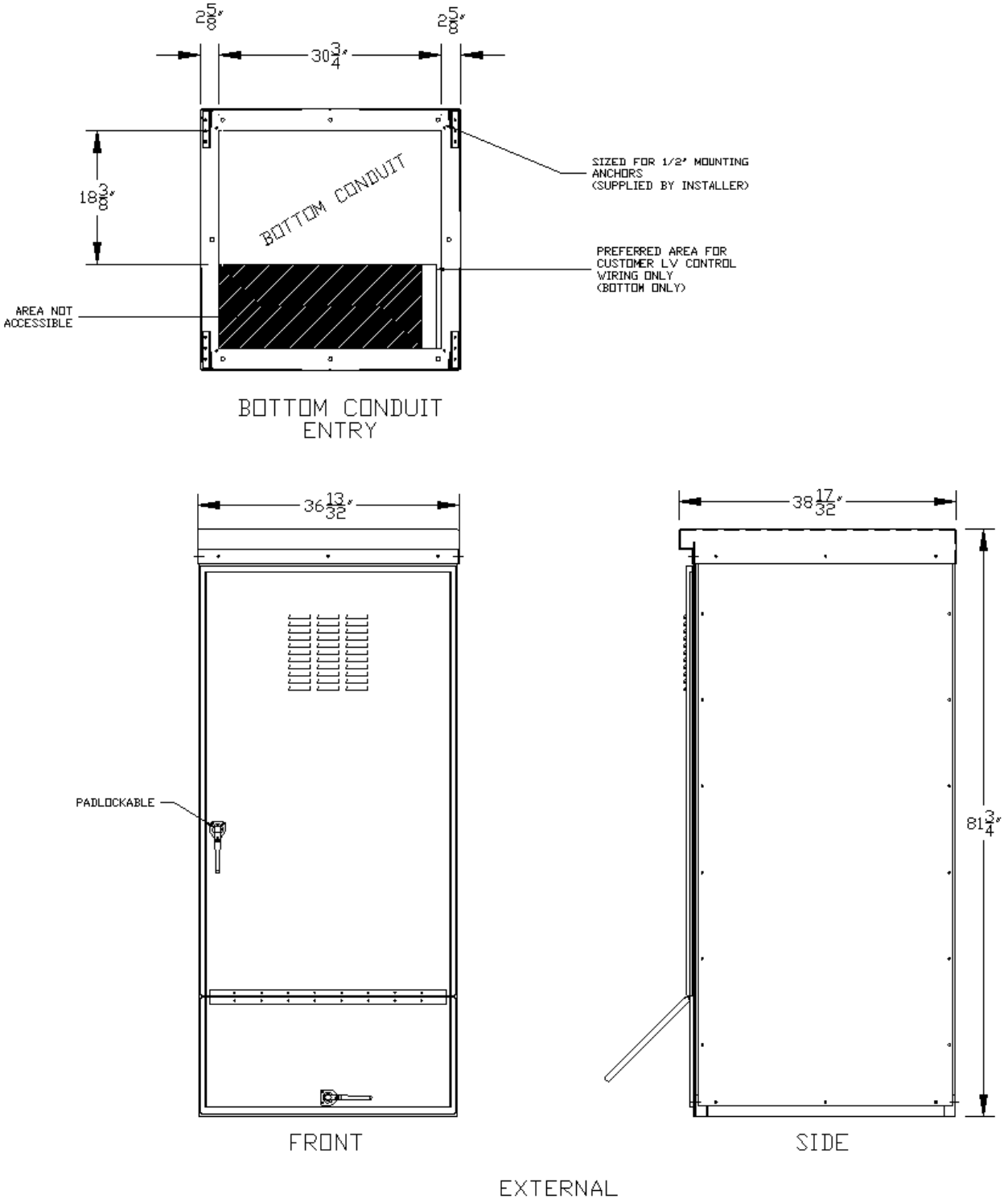

Figure 10: External Schematic 1*

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GLQC Switchboard Drawing 2

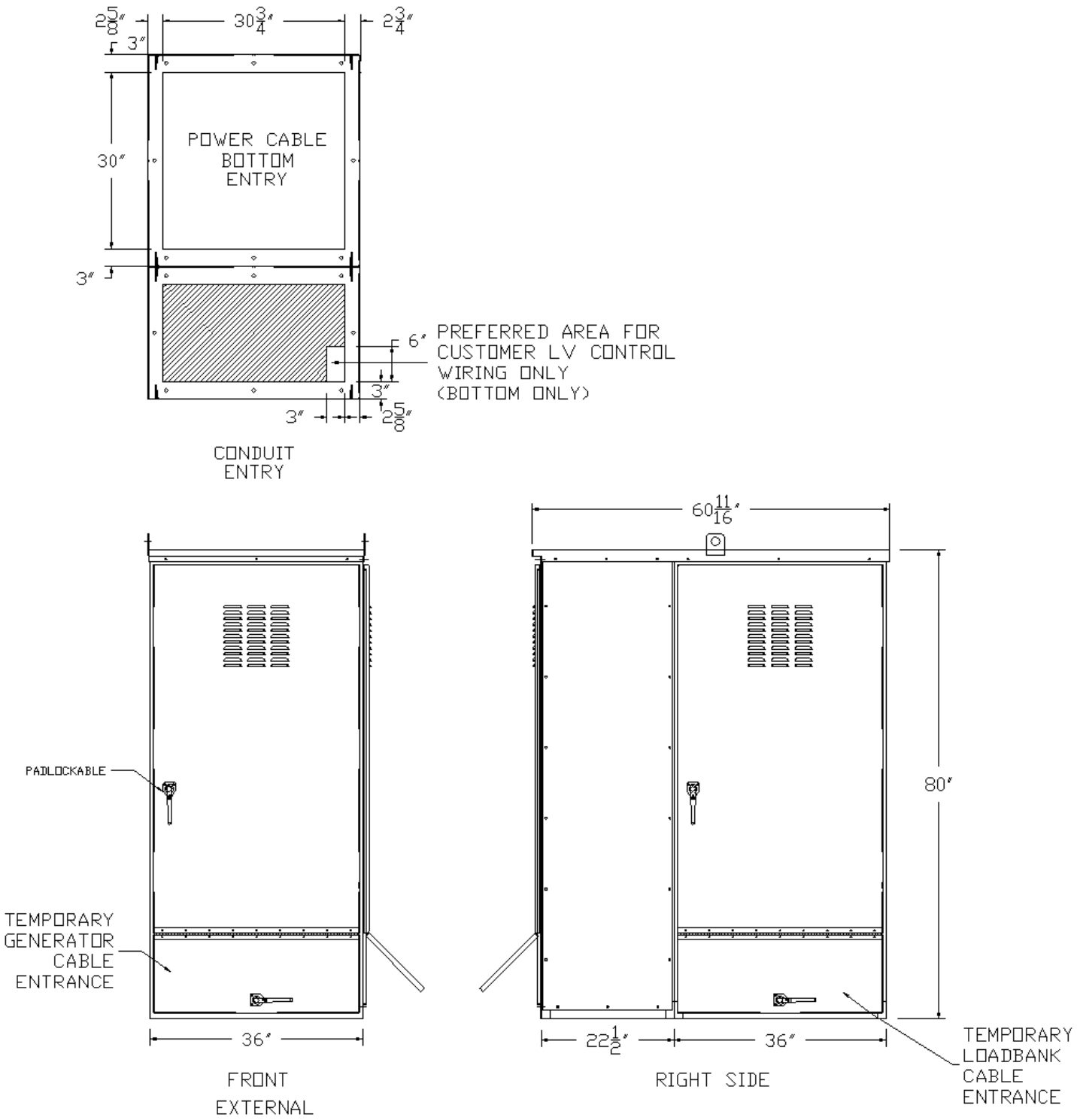

Figure 11: External Schematic 2*

GLQC Switchboard Drawing 3

Figure 12: External Schematic 3 Coming Soon*

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APT Product Part Number Builder

Coming Soon!

Typical Applications for GQC & LQC

Generator Only Configurations

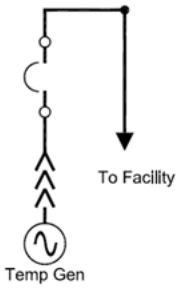

Figure 13: Single Circuit Breaker Option*

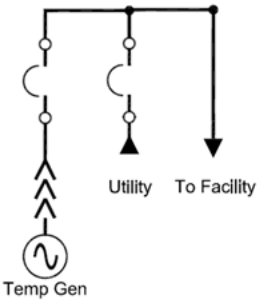

Figure 14: Dual Circuit Breaker Option w/ Utility + Gen Breaker*

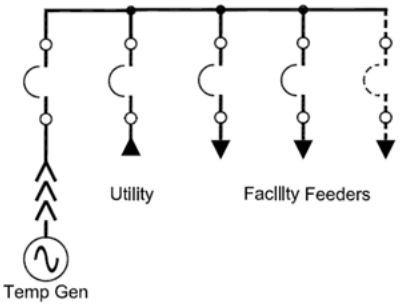

Figure 15: Multiple Circuit Breakers Option*

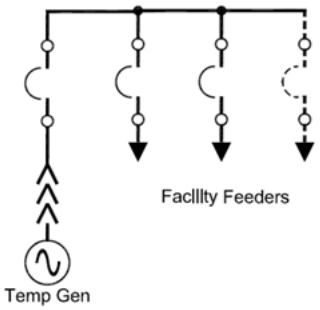

Figure 16: Feeder Circuit Breakers Option*

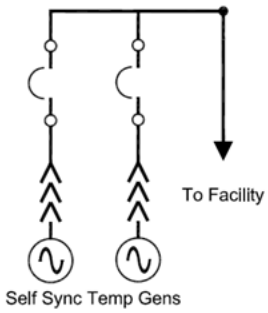

Figure 17: Two Self Sync Temp Gensets into two sets of Cam-loks*

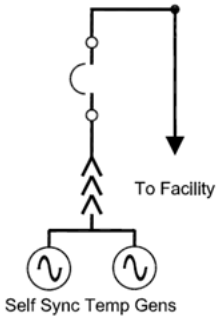

Figure 18: Two Self Sync Temp Gensets into one set of Cam-loks*

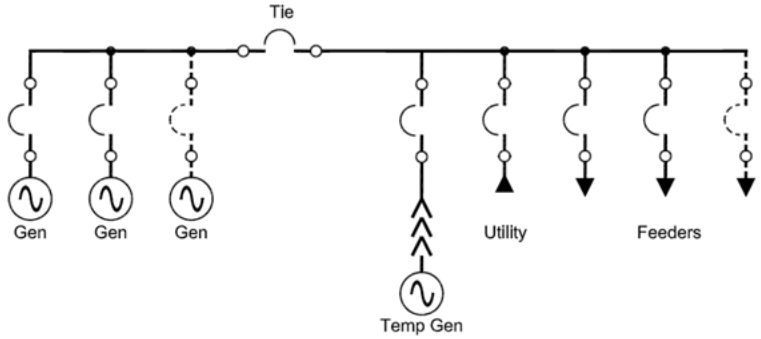

Figure 19: GQC Integrated into Low Voltage Switchgear*

Load Bank Only Configurations

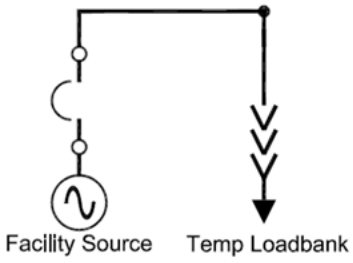

Figure 20: LQC Single Circuit Breaker Option*

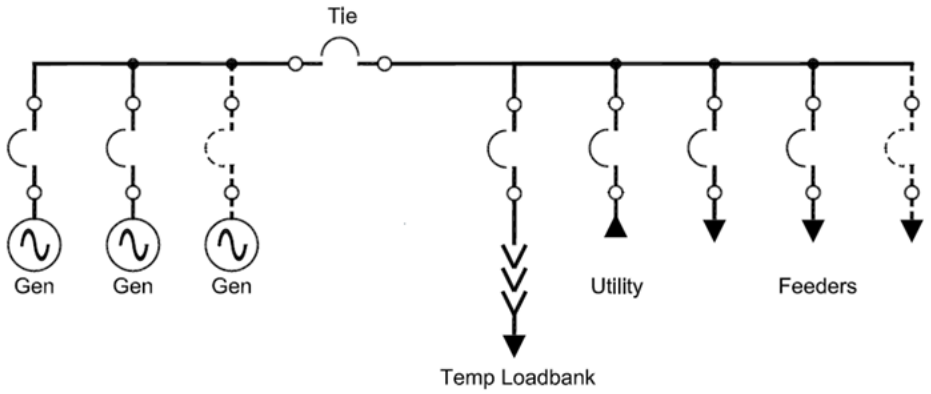

Figure 21: LQC Integrated into Low Voltage Switchgear for Annual Genset Testing*

Typical Applications for GLQC

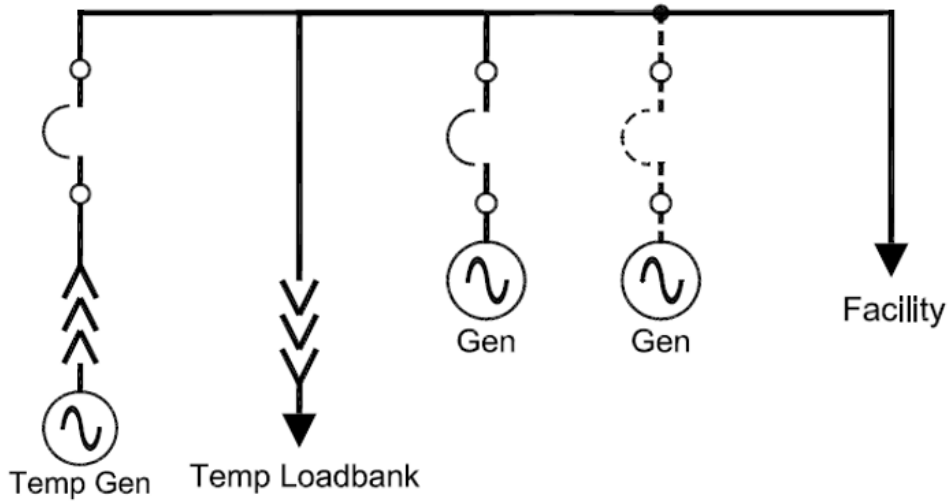

Figure 22: Generator & Load bank Quick Connection
Switchboard with Temporary Generator Circuit Breaker Only*

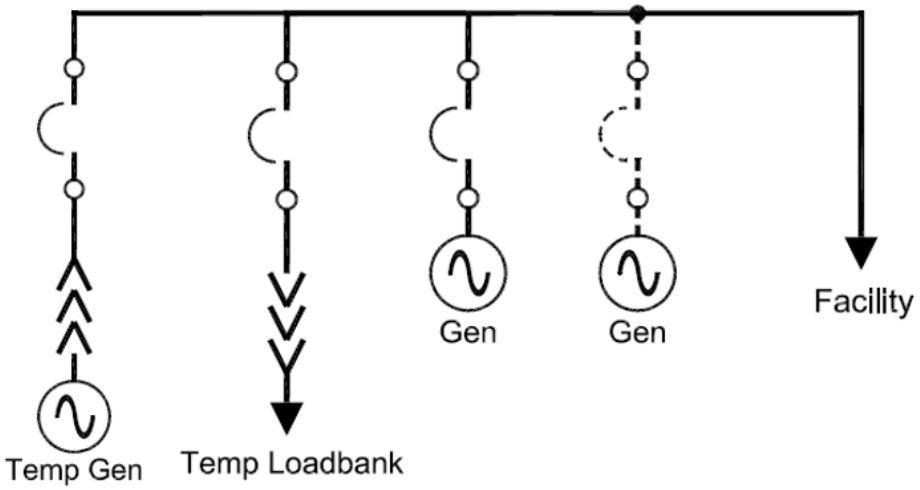

Figure 23: Generator & Load bank Quick Connection Switchboard with
Temporary Generator & Load bank Circuit Breakers*

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About Advanced Power Technologies



Advanced Power Technologies (APT) is a global key player in 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/Load Bank Quick Connection Switchgear, Switchboards, & Tap Boxes
- Industrial Control Panels

Please see our product webpages on www.apt-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 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.