



ADVANCED POWER  
TECHNOLOGIES

# Neutral Grounding Resistor (NGR) Low Resistance Grounding System



LZR-Series & LZR-P  
Grounding Systems  
Solutions Brochure

[www.apr-power.com](http://www.apr-power.com)  
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**SAFE SMART SERVICEABLE SWITCHGEAR &  
ENGINEERED POWER SYSTEM SOLUTIONS**



ALN: 533 Rev. 05

# Standard Construction



Figure 1: LZR-Series 5kV, 400A NGR  
Galvanized NEMA 3R

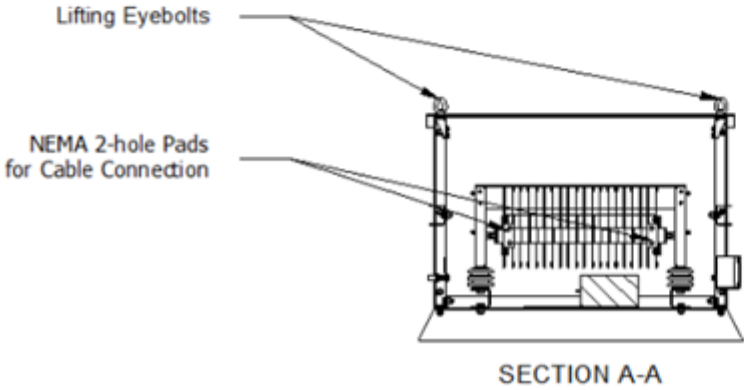
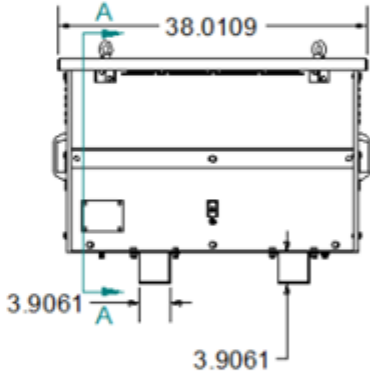
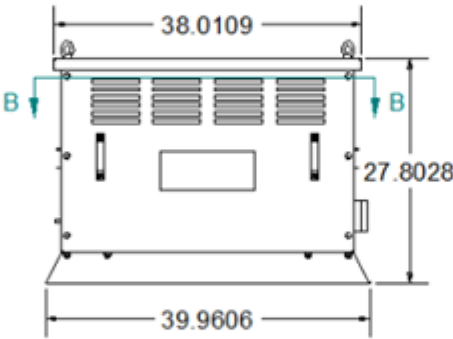
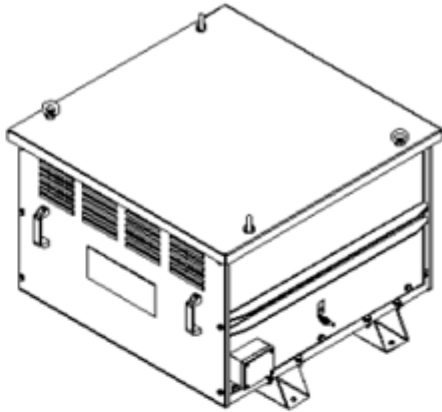
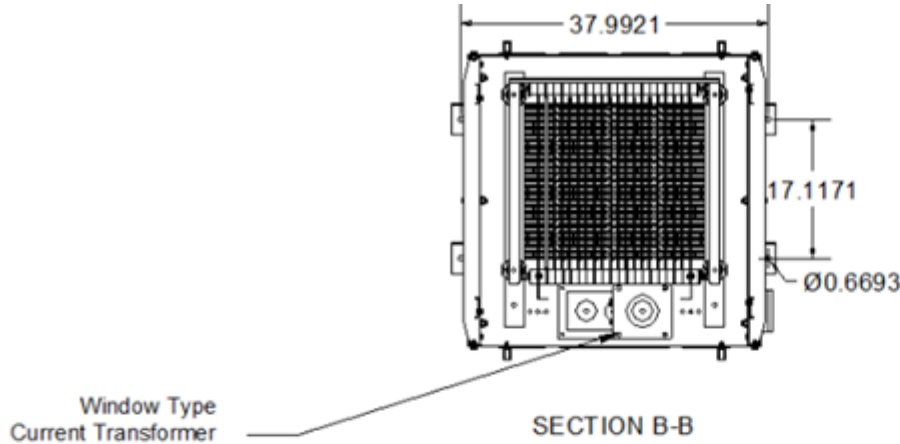


Figure 2: LZR-P 15kV, 100A NGR Painted with  
Optional Top Mounted Connection Bushings

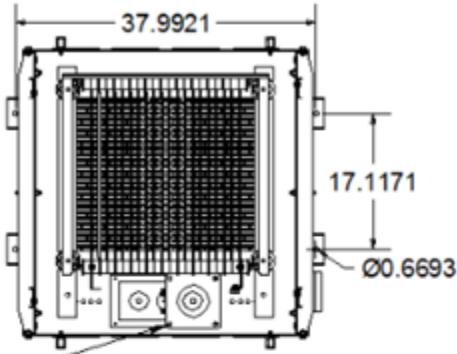
## 2.4kV-15kV Neutral Grounding Resistor (NGR)

- ⊙ System Ratings:
  - Voltage: 2.4kV-15kV (3Ø)
  - Current: 100A-400A
- ⊙ Designed & factory tested to IEEE Standard 32-1972
- ⊙ LZR-P available to meet all applicable specifications from:
  - Seismic Zone 2 requirements of the Uniform Building Code
  - ANSI, NEMA
  - NEC, NFPA
- ⊙ For use in the neutrals of generators, transformers, and other rotating machines
- ⊙ Reduces stress and the amount of damage to your power system equipment by controlling the magnitude of the ground fault currents
- ⊙ Limits the amount of generator available Line to Neutral fault current
  - Fault current is limited to below design limits set by the NEMA MG1 generators design standard
- ⊙ Reduces the magnitude of harmonic currents, circulating in the neutrals of paralleled generators due to differences in the generator winding pitches, armature reaction, and other system conditions
- ⊙ Standard Enclosure:
  - Filtered ventilation louvers
  - NEMA 1/3R for indoor/outdoor applications
  - Hot Dip Galvanized
  - Bottom Entry/Exit
- ⊙ LZR-P Option to accommodate tight lead time requirements and other site-specific specifications.
- ⊙ Enclosure Options:
  - Aluminum, Stainless Steel (304 or 316)
  - Powder coated ANSI 61 Gray or custom colors
  - Connection Bushings:
    - One or Two
    - Top or Side Mounted
- ⊙ Neutral Sensing & Monitoring:
  - Window Type or Bar Type Current Transformer
    - Secondary terminals available for field interconnection to the ground fault relay
  - Unfused or Fused Voltage Transformer
- ⊙ Approximate Weight: 500 lbs.

# LZR-Series Standard 2.4kV<sub>LL</sub>-4.8kV<sub>LL</sub>

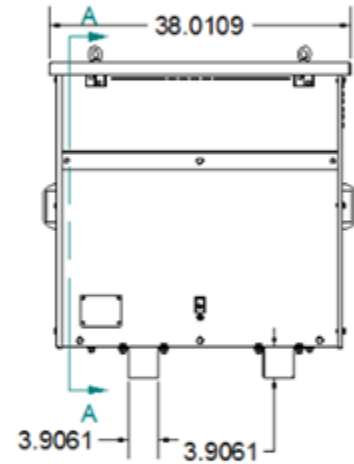
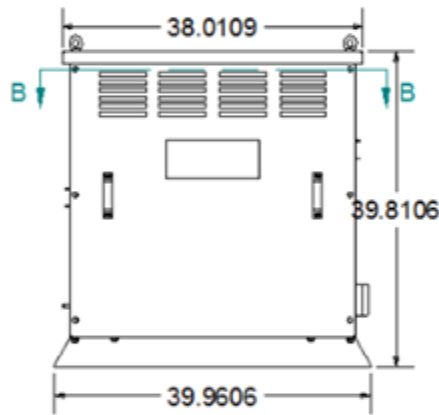
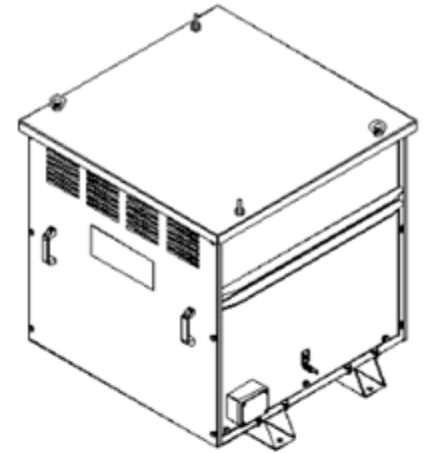


# LZR-Series Standard 6.9kV<sub>LL</sub>-8.32kV<sub>LL</sub>



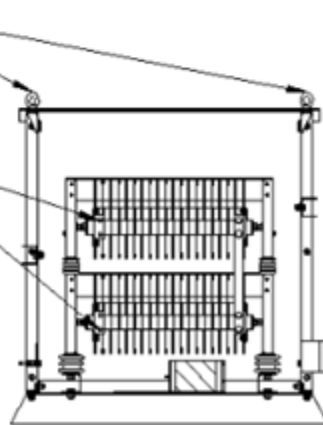
Window Type  
 Current Transformer

SECTION B-B



Lifting Eyebolts

NEMA 2-hole Pads  
 for Cable Connection

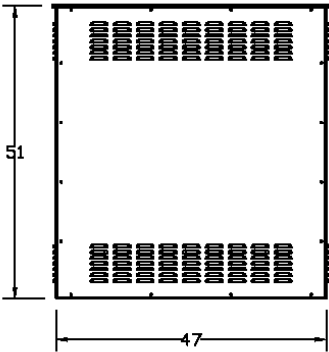


SECTION A-A

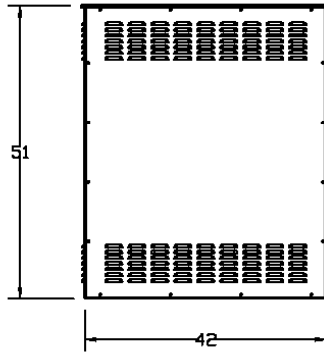
# LZR-Series Standard 12kV<sub>LL</sub>-13.8kV<sub>LL</sub>

## EXTERIOR VIEWS

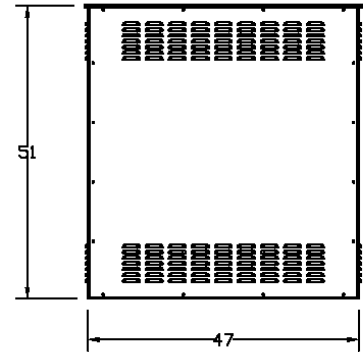
LEFT SIDE VIEW



FRONT VIEW



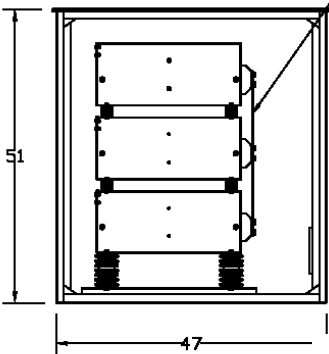
RIGHT SIDE VIEW



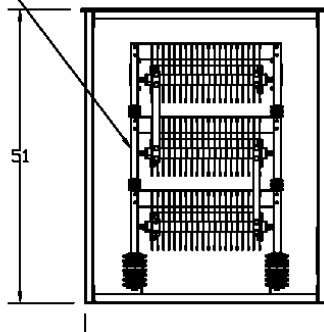
NOTE:  
 1. Some internal items shown are optional based on configuration and features ordered.

## INTERIOR VIEWS

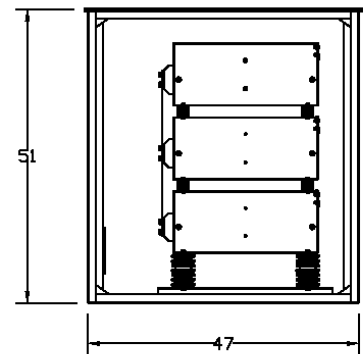
LEFT SIDE VIEW



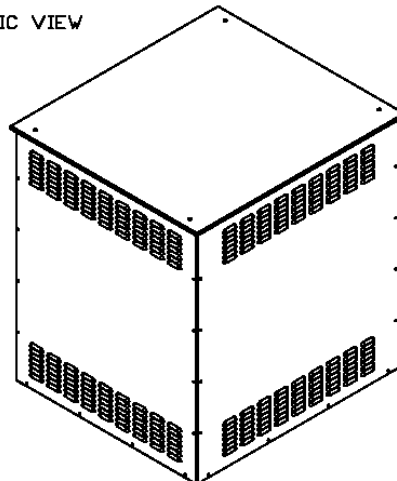
FRONT VIEW



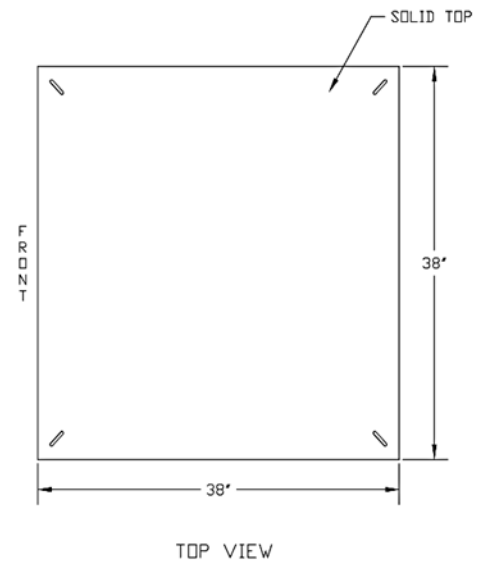
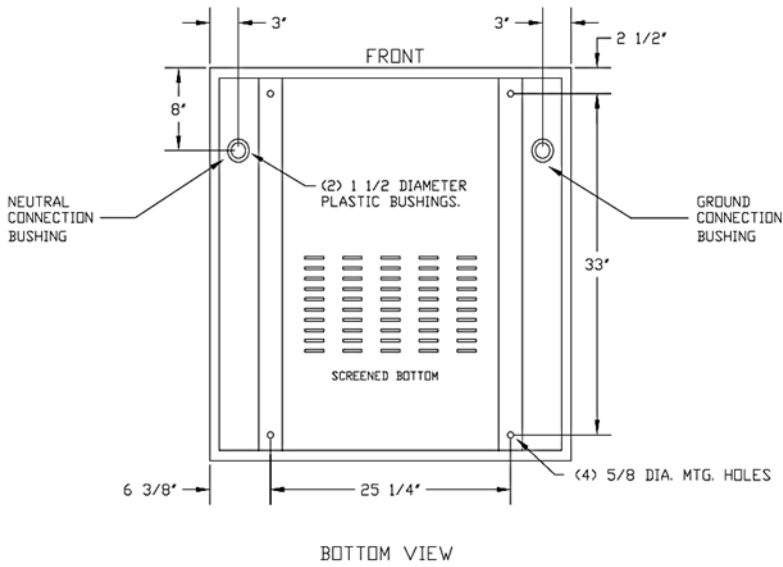
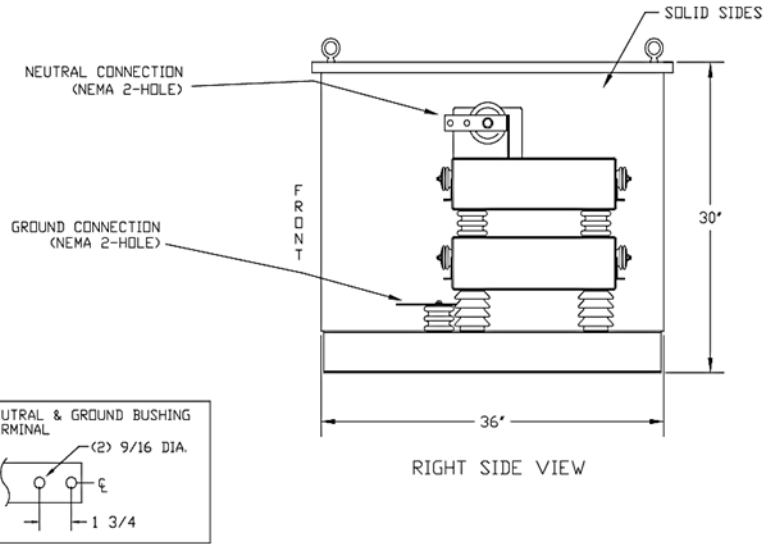
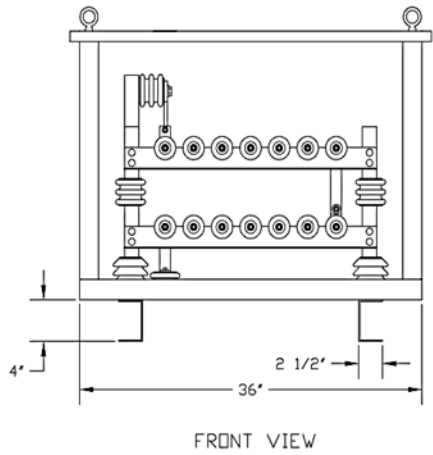
RIGHT SIDE VIEW



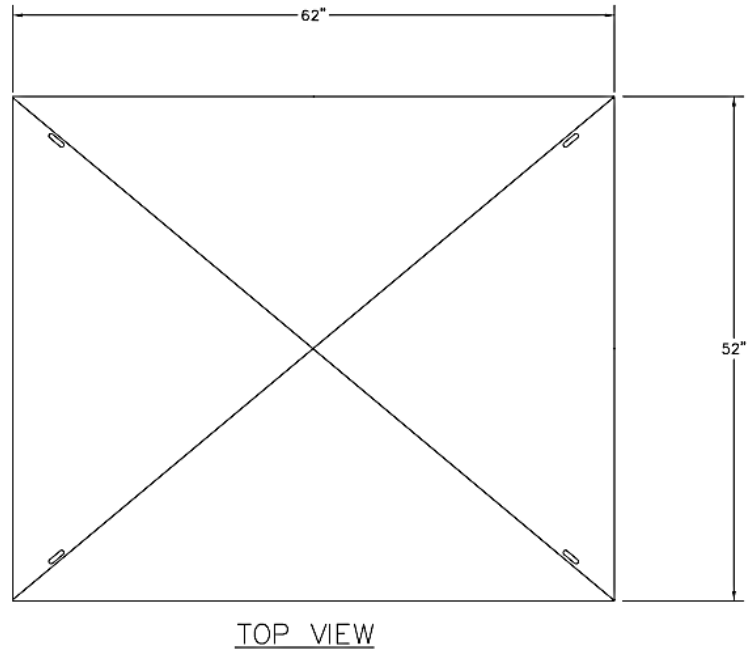
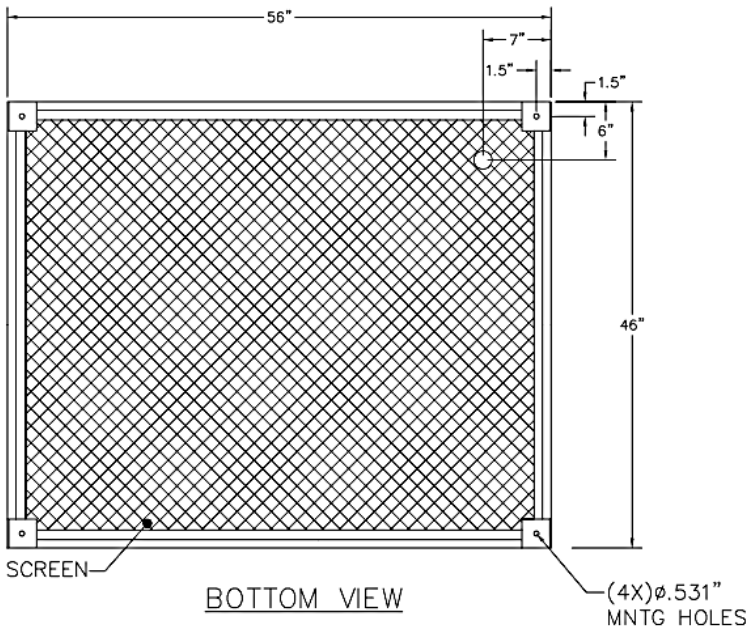
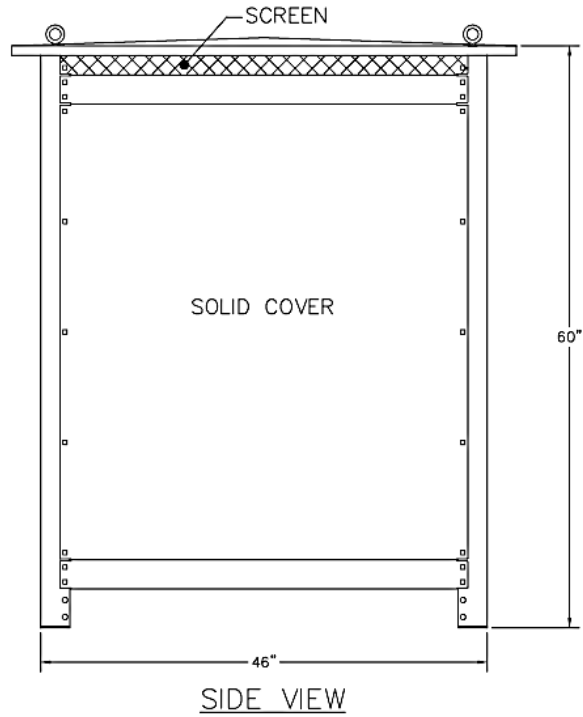
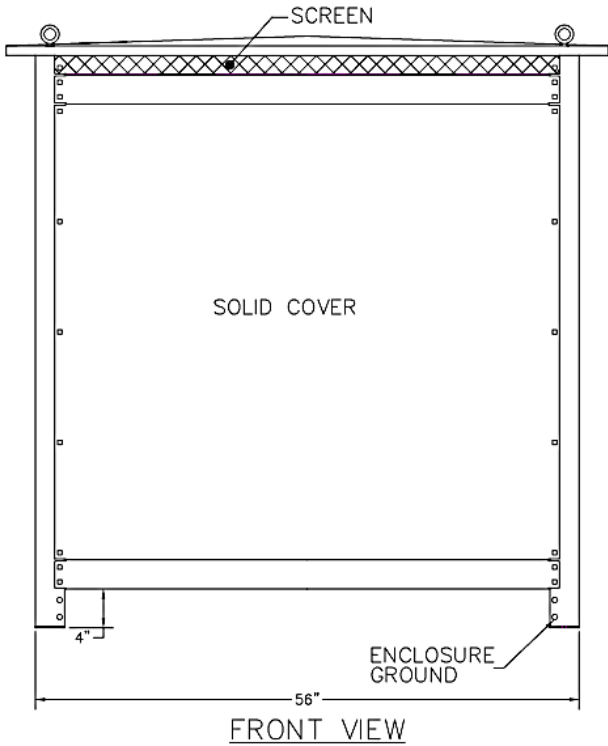
ISOMETRIC VIEW



# LZR-P 5kV Drawing



# LZR-P 15kV Drawing

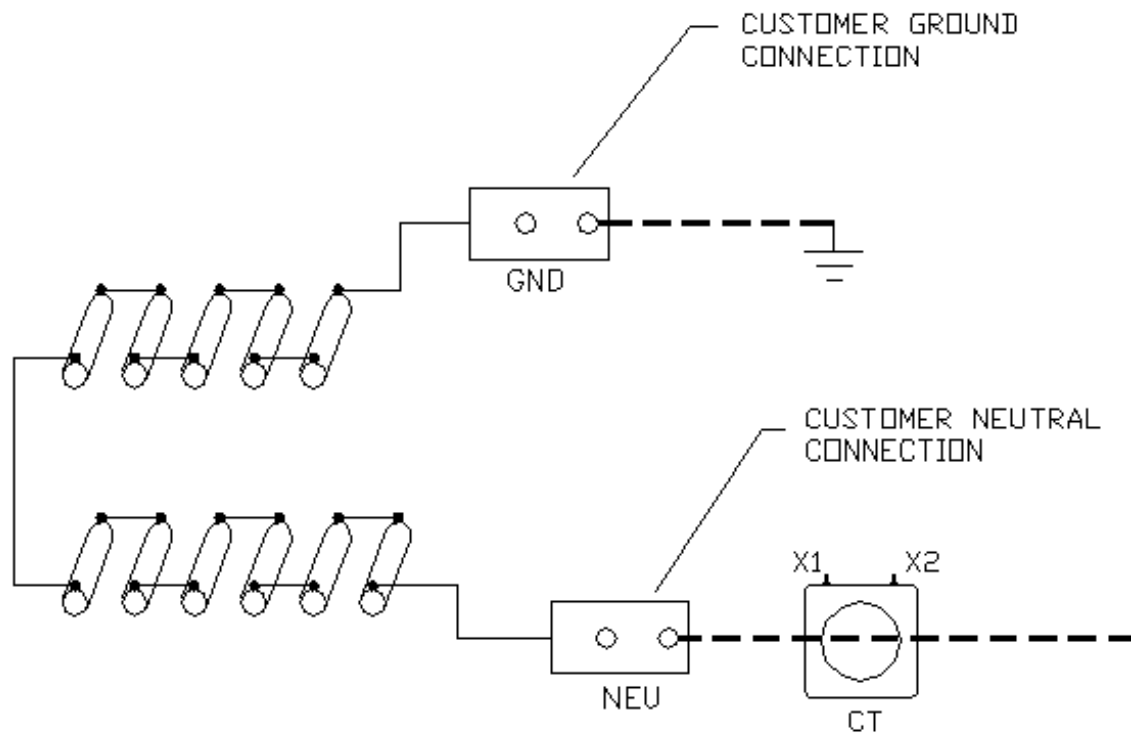


# APT Product Part Number Builder

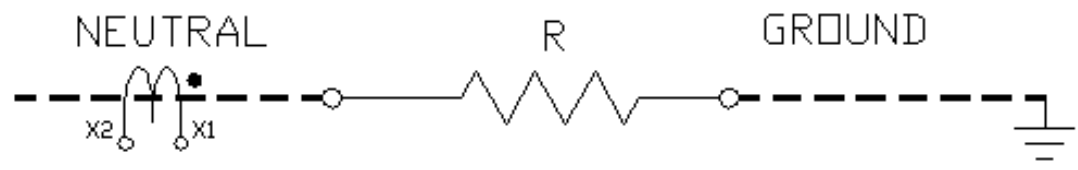
Coming SOON!

# Application Diagram & Schematic

## Connection Diagram



## Schematic



# 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](http://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.