



LAYERZERO
POWER SYSTEMS, INC.

The Foundation Layer

LayerZero® eRDP SAFEARM®
Remote Distribution Panel w/ Arc Reduction Mode (ARM)

(1) 800 A SafePanel Distribution

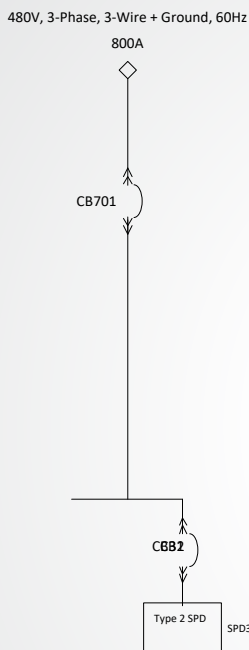


Product Brochure

The LayerZero eRDP: SAFEARM® Maximizes Operator Safety

eRDP: SAFEARM® Is Inspired by NFPA-70E

The Series 70 eRDP: SAFEARM® is a finger-safe remote distribution panel rated: 1600A, 65kAIC. for critical industries. It features an NFPA 70E friendly design, sectionalized layout, and the IP-20 rated Finger-Safe SafePanel, to help protect operators and ensure safe operation. With an emphasis on reliability, safety, power quality monitoring, and connectivity, the Series 70 eRDP: SAFEARM® provides highreliability power distribution. The Series 70 eRDP: SAFEARM® is designed to be easy to work with, to minimize risk during installation, ideal for growing or constantly changing environments.



LayerZero's eRDP SAFEARM® Product Features

Reliability

- ✓ **Silver Plated Input Terminals:** Silver has excellent conductivity to provide superior electrical performance and reliability.
- ✓ **Machined Hardware:** Machined cap screws and engineered disc springs maintain constant torque throughout product life.
- ✓ **Screw Thread Inserts:** Prevents screws from loosening under vibration for long-term reliability.
- ✓ **Serialized Critical Board Tracking:** Critical boards are serialized and cataloged in an active database for traceability.
- ✓ **Set one piece of equipment in place versus setting several panels and a transformer:** Reduces complexity and potential points of failure, enhancing reliability.
- ✓ **Wiring to and from equipment done in controlled factory setting, less field terminations:** Ensures consistent quality and reliability through controlled factory conditions.

Safety

- ✓ **INSIGHT IR® Portholes:** Bolted connections can be IR scanned with the dead-front doors closed.
- ✓ **INSIGHT IR® Cameras:** Monitor critical connections 7/24 for abnormal rises in temperature
- ✓ **Sectionalized Components:** Separations between each section to maintain maximum operator safety.
- ✓ **Polycarbonate Windows:** Allows circuit breaker positions to be viewed with the dead-front door closed.
- ✓ **Dead Front Hinged Doors:** Barrier to provide a safe working area with no exposed live parts.
- ✓ **SafePanel® Distribution:** IP-20 rated finger-safe panel board designed for operator safety
- ✓ **Guided Wireways:** Helps keep wires organized.
- ✓ **Cyber Security:** Protects the system from cyber threats, ensuring safe and secure operation.

Connectivity

- ✓ **Ethernet Connectivity:** Secure VPN router connects to network for advanced remote monitoring capabilities.
- ✓ **Modbus/TCP:** Open connectivity to existing monitoring systems without proprietary limitations.
- ✓ **NTP Time Clock Synchronization:** Facilitates timeline-based logging for post-event reconstruction.
- ✓ **SNMP Connectivity:** Permits remote management via Simple Network Management Protocol.
- ✓ **Compact approach, one cabinet saves floor space:** Enhances system connectivity by simplifying the setup.



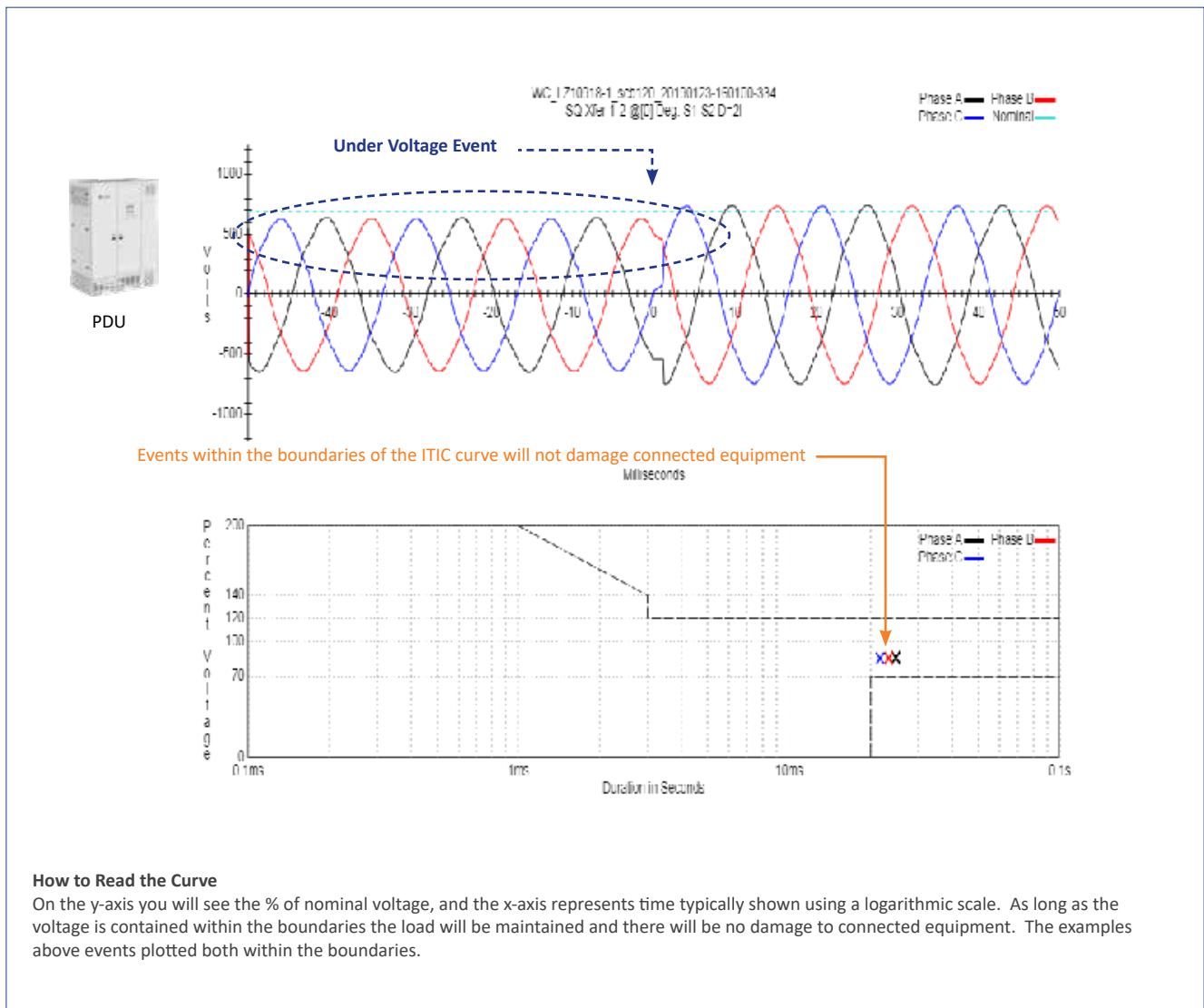
- ✓ **Real-Time Waveform Capture:** Automatically captures a picture of the power six-cycles before and after every event.
- ✓ **Optional Local Touch-Screen Interface:** Password-protected color touch-screen GUI for local ePODs setup/operation.
- ✓ **Black-Box Forensics:** ePODs captures and records events to provide vital information in root-cause analysis.
- ✓ **Fully monitored and metered:** Provides comprehensive monitoring capabilities for real-time INSIGHTs and management.

All LayerZero products break down power sources into samples for power quality analysis. This data is remotely accessible by connecting to the units via web browser.

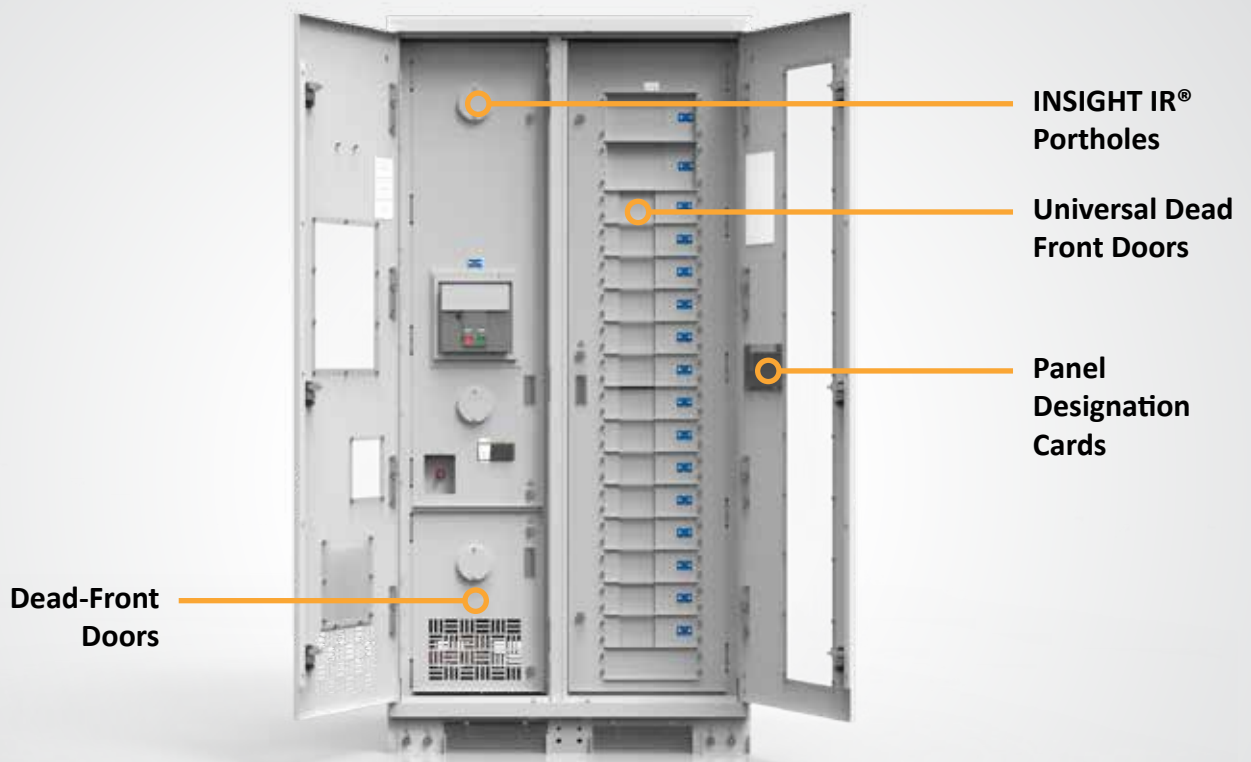
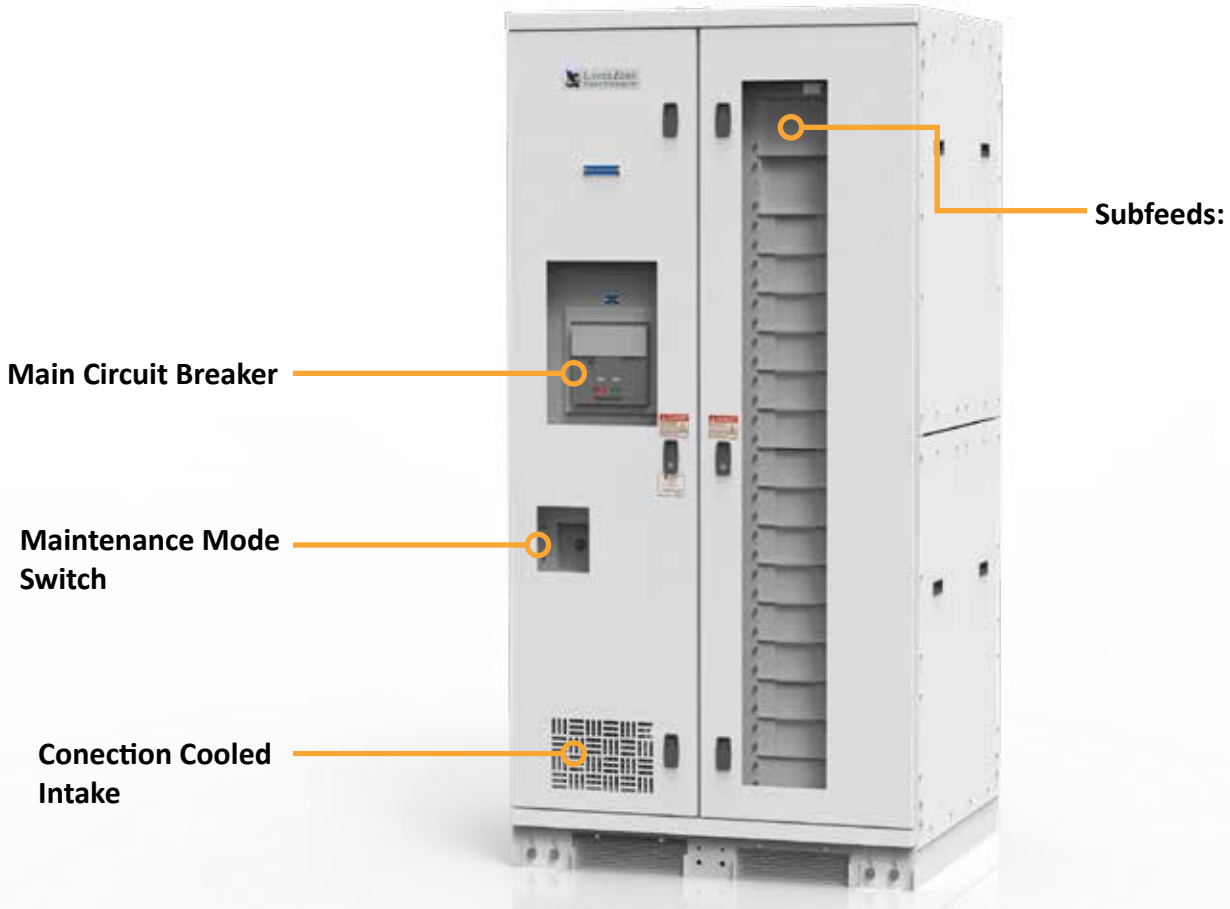
The following “voltage sag” factory test was performed on a LayerZero PDU. Each phase is represented by a colored line, plotting the voltage over a period of time.

In the example below, the voltage of all three phases dropped below the user-defined setpoint, which triggered an undervoltage event, an automatic waveform capture, and an ITIC plot of the event.

On LayerZero PDUs and RPPs, waveforms and ITIC plots are generated for every phase, on every circuit, for every event.

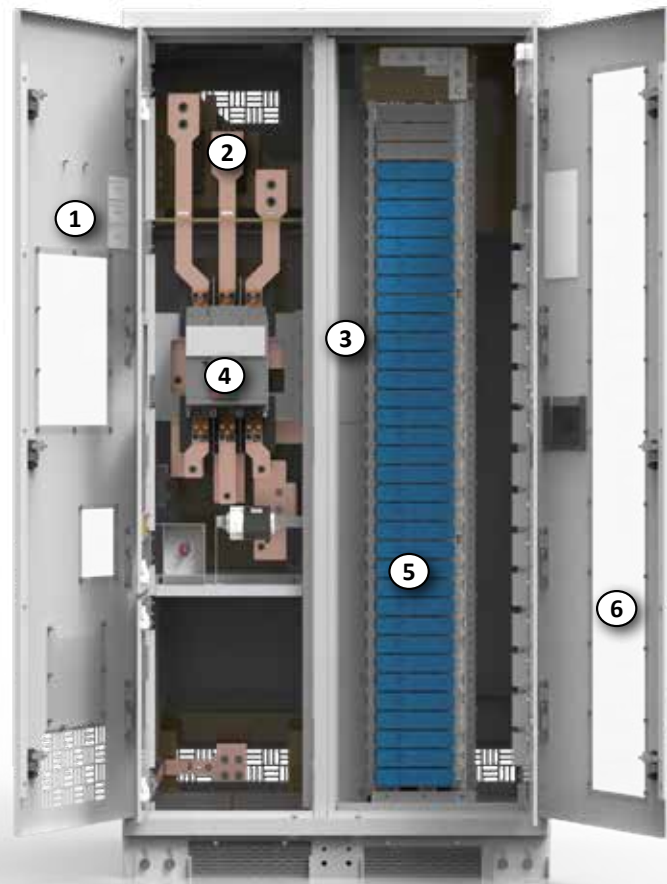


Equipment Layout



Equipment Construction Detail

1. Hinged Dead Front Doors
2. Silver Plated Terminals
3. Wire Routing
4. Main Circuit Breaker
5. SafePanel® Covers
6. Polycarbonate Windows



Customer Cable Access



Silver Plated Terminals

LayerZero utilizes silver plating on all input terminals to be able to provide the highest performance. Silver has high conductivity and low resistance - which makes for a great contact.



Machined Hardware

Our bolted connections utilize machined cap screws and engineered disc springs. The result is a flat pressure vs deflection profile to ensure that all bolted connections maintain constant torque through the life of the product.

These technologies have been well tested in disparate environments of wide temperature ranges to help ensure that, once connections have been tightened, they stay that way.



View CB Positions With Dead-Front Doors Closed

The Series 70: SAFEARM® is equipped with polycarbonate windows located on the outer door of the subfeed circuit breaker section.

Circuit breaker positions can be viewed with the dead-front door closed.



Safety Features/Ease of Maintenance

Scan Bolted Connections with Dead-Front Doors Closed

Strategically positioned IR-scan portholes to enable safe thermal scanning of all bolted connections with the deadfront closed, without exposing the operator to power circuit voltage.

The IR window swivels upward and unlocks with key-hole access to reveal a mesh, allowing the operator to point-and-shoot thermal cameras to obtain accurate readings. LayerZero provides documentation for proper thermal scanning procedures.



Cable Lashing Supports

Help keep cables and wiring organized with our cable lashing supports.



Sectionalization Maximizes Operator Safety

Operators are well-protected from exposed connections. Normal operator sections (breakers/switches) are physically separated from the power electronics and control electronics sections, so that maintenance on a section can be safely performed. If maintenance is required on a particular section, power can be bypassed to another section to allow for safe repairs to be made.

After installation, there is no need to open the eRDP left cabinet.

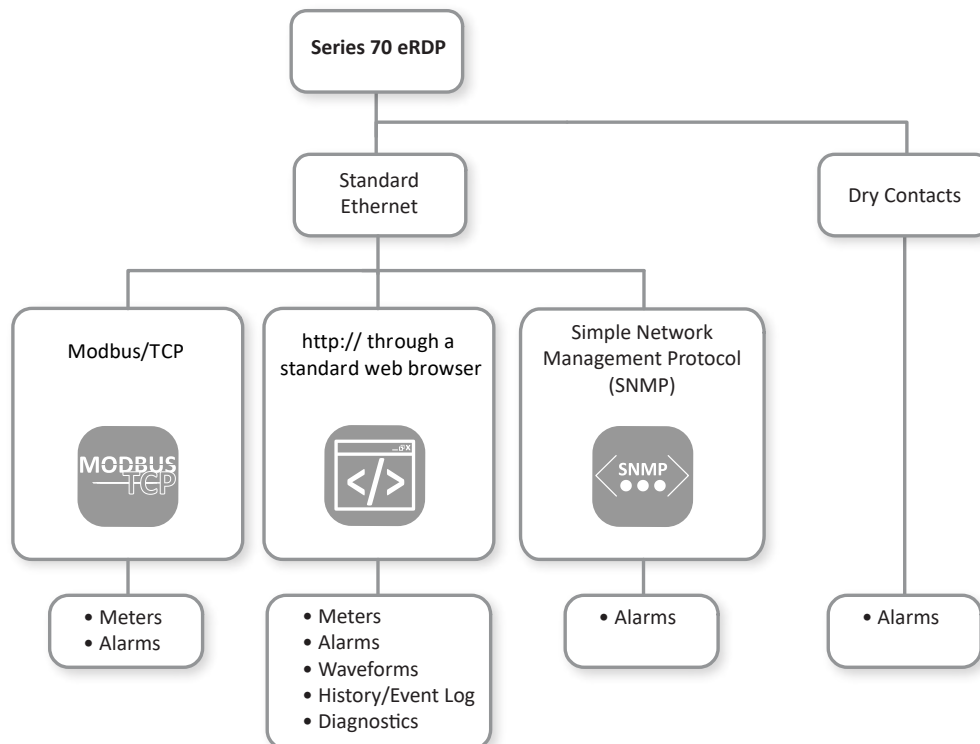


The LayerZero SafePanel®

The Series 70 SAFEARM® features an IP-20, finger-safe panel board, meaning that the opening will not allow ingress of ½” (12.5mm) diameter probe, for maximum operator safety.

An arc can form as two live conductors are separated – such as the removal of a circuit breaker from a panel board. The SafePanel design ensures that a potential arc would be contained in the connection well so that even if a branch breaker were to be removed, the arc would be contained in the connection well.

Insulated with the components deeply isolated, removal of the breaker is safe and easy.



DPQM

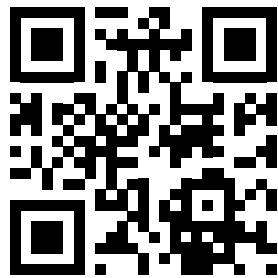
LayerZero DPQM Parameters		Mains	Subfeeds or Branch Circuits
Voltage Monitor	Volts (L-L) Phase A/B/C (volts RMS)	✓	
	Volts (L-N) Phase A/B/C (volts RMS)	✓	
	Phase Rotation	✓	
Current Monitor	CT Reversed Phase A/B/C/N	✓	✓
	Current Phase A/B/C/N (amperes RMS)	✓	✓
Power Monitor	Frequency (hertz)	✓	
	Real Power (kilowatts)	✓	✓
	Apparent Power (kilovolt-amperes)	✓	✓
	Reactive Power (kilovolt-amperes reactive)	✓	✓
	Power Factor	✓	✓
	Energy (kilowatt-hours)	✓	✓
	Block Demand (kilowatts)	✓	✓
	Block Demand Peak (kilowatts)	✓	✓
	Rolling Demand (kilowatts)	✓	✓
	Rolling Demand Peak (kilowatts)	✓	✓
Power Quality	Percent VTHD (percent)	✓	✓
	Waveform Capture	✓	✓
Alarms	Phase - Under Voltage A/B/C (Alarm)	✓	
	Phase - Over Voltage A/B/C (Alarm)	✓	
	Phase - Low Voltage A/B/C (Warning)	✓	
	Phase - High Voltage A/B/C (Warning)	✓	
	Phase - Over Current A/B/C (Alarm)	✓	✓
	Phase - High Current A/B/C (Warning)	✓	✓
	Under Frequency (Alarm)	✓	
	Over Frequency (Alarm)	✓	
	High VTHD (Warning)	✓	
	Over VTHD (Alarm)	✓	
	Phase Rotation (Alarm)	✓	

All product specifications are subject to change without notice.

Technical Specifications

Mechanical Characteristics	
Dimensions	88" H x 43" W x 36" D (1680 mm H x 1100 mm W x 920 mm D)
Clearances:	Front: 42" [1067 mm], Rear: 6" [152 mm], Left/Right: 0" [0 mm], Top: 18" [457 mm]
Weight	2,000 lbs (910kg)
Frame	Construction Welded Frame
Color	Textured Powder Coat White (RAL 7035), Blue (RAL 5017), Black, Custom
Seismic Floor Anchors	Optional
Seismic Floor Stand	Optional
Sectionalization	Dead Front Doors; Main CB(s); Monitoring
System Mounting Type	Freestanding
Electrical Characteristics	
Input Voltages	480V, 3-Phase, 3-Wire + Ground
System Input Current Rating	800 A
Frequency	60 Hz
System Withstand	65kA
Current Rating	800 A
Short Circuit Rating	65kAIC
Distribution	SafePanel® Distribution
Main Circuit Breaker Frame Rating	1600
MCB Type	Electronic Trip (LSIG) w/ Arc Reduction Mode (ARM)
Percent Rating	100%
Power Quality Monitoring	
Metering Accuracy	Metering is 1% Revenue Grade per IEEE C12.1
Power Quality Monitoring Technology	LayerZero DPQM® (Distribution Power Quality Monitoring)
Waveform Capture	Local Display (Optional), Remote Display via Web Browser
Operational Characteristics	
Cooling	Convection Cooling
Cable Access	Top/Bottom
Service Access	Front Only Access
IR Scan Port Type	INSIGHT IR® Portholes
Embedded Thermography	INSIGHT IR®
Display Type	(Optional)
Connectivity	
Meters	Local Display, Ethernet, BACNet/IP, Modbus/TCP, http via Web Browser (Non-Proprietary)
Alarms	Local Display, Ethernet, BACNet/IP, Modbus/TCP, http via Web Browser (Non-Proprietary)
Summary Alarm	Dry Contacts
Waveforms	Local Display, Ethernet, http via Web Browser (Non-Proprietary)
History/Event Log	Local Display, Ethernet, http via Web Browser (Non-Proprietary)
Diagnostics	Local Display, Ethernet, http via Web Browser (Non-Proprietary)
Time Synchronization	Network Time Protocol (NTP)
Standards Conformance	
UL	ETL listed to UL 891

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Learn more at www.LayerZero.com



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