LayerZero Power Systems, Inc.

The Foundation Layer

Series 70 eRPP-SL1

Slim Remote Power Panel

Product Brochure

eRPP-SL1 Facilitates High-Density Distribution While Maximizing Operator Safety

Make The Most of Available Data Center Space

The Series 70: eRPP-SL1 maximizes the utilization of available critical space while working to keep facilities operator safe. The LayerZero Power Systems eRPP-SL1 maximizes safety, with the finger-safe SafePanel™ panel board, and no exposed live parts. eRPP-SL1 includes Zen DPQM™, with advanced power quality monitoring capabilities, including real-time waveform capture. For applications that require maximization of available critical facility space while maintaining the highest reliability, eRPP-SL1 is an ideal solution.

LayerZero's eRPP-SL1 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
- ☑ **Convection Cooling:** Natural Convection-Cooled Heat Dissipation System is Maintenance-Free
- ☑ **Serialized Critical Board Tracking:** Critical Boards Are Serialized And Cataloged in an Active Database For Traceability
- ☑ **Selective Trip Coordination:** Main Breaker Will Not Trip In The Event of a Downstream Fault.
- ☑ **High Density Distribution:** Supports High-Density and Ultra-High Density Distribution

Safety

- ☑ **InSight™ IR Portholes:** Bolted Connections Can Be IR Scanned With the Dead-Front Doors Closed
- ☑ **Sectionalized Components:** Separations Between Each Section To Maintain Maximum Operator Safety
- ☑ **Polycarbonate Windows:** Allows Circuit Breaker Positions Viewed With The Dead-Front Door Closed
- ☑ **Dead Front Hinged Doors:** Barrier To Provide A Safe Working Area With No Exposed Live Parts
- ☑ **Guided Wireways:** Helps Keep Wires Organized

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
- ☑ **Bluetooth Connectivity:** Wirelessly Set Up Panels At The Point-Of-Impact

zen DPQM

- ☑ **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:** eRPP-SL1 Captures and Records Events To Provide Vital Information In Root-Cause Analysis

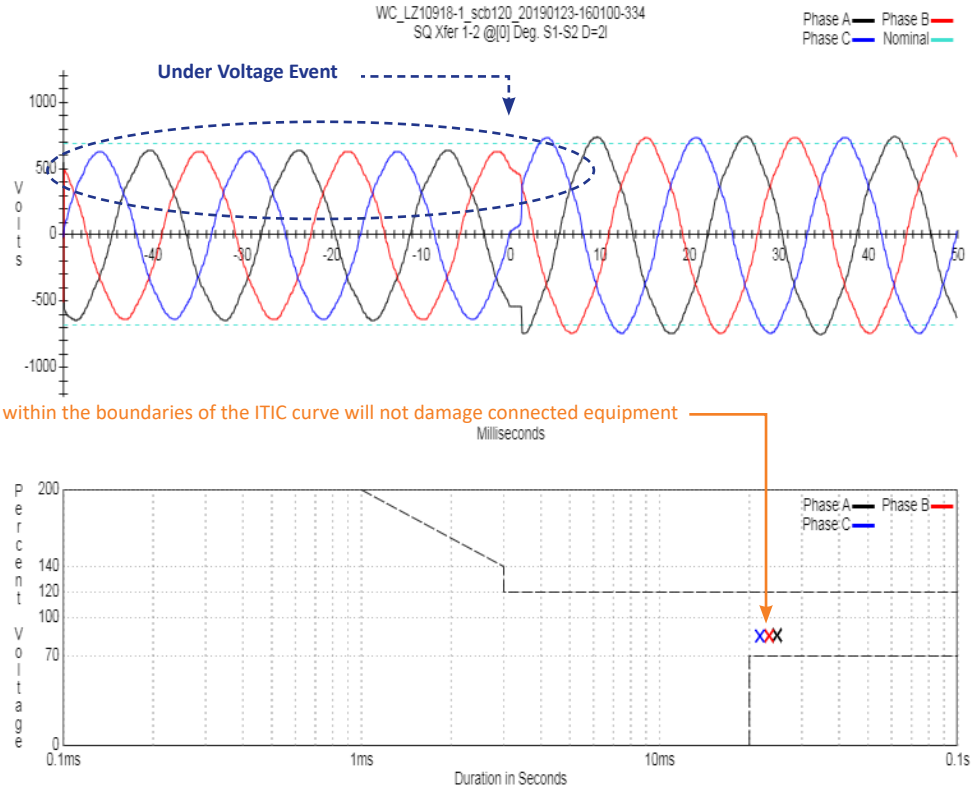
All LayerZero products break down power sources into samples for power quality analysis. This data is remotely accessible by connecting to the units via web browser.

The following “voltage sag” factory test was performed on a LayerZero Series 70 ePODs: Type-X 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.

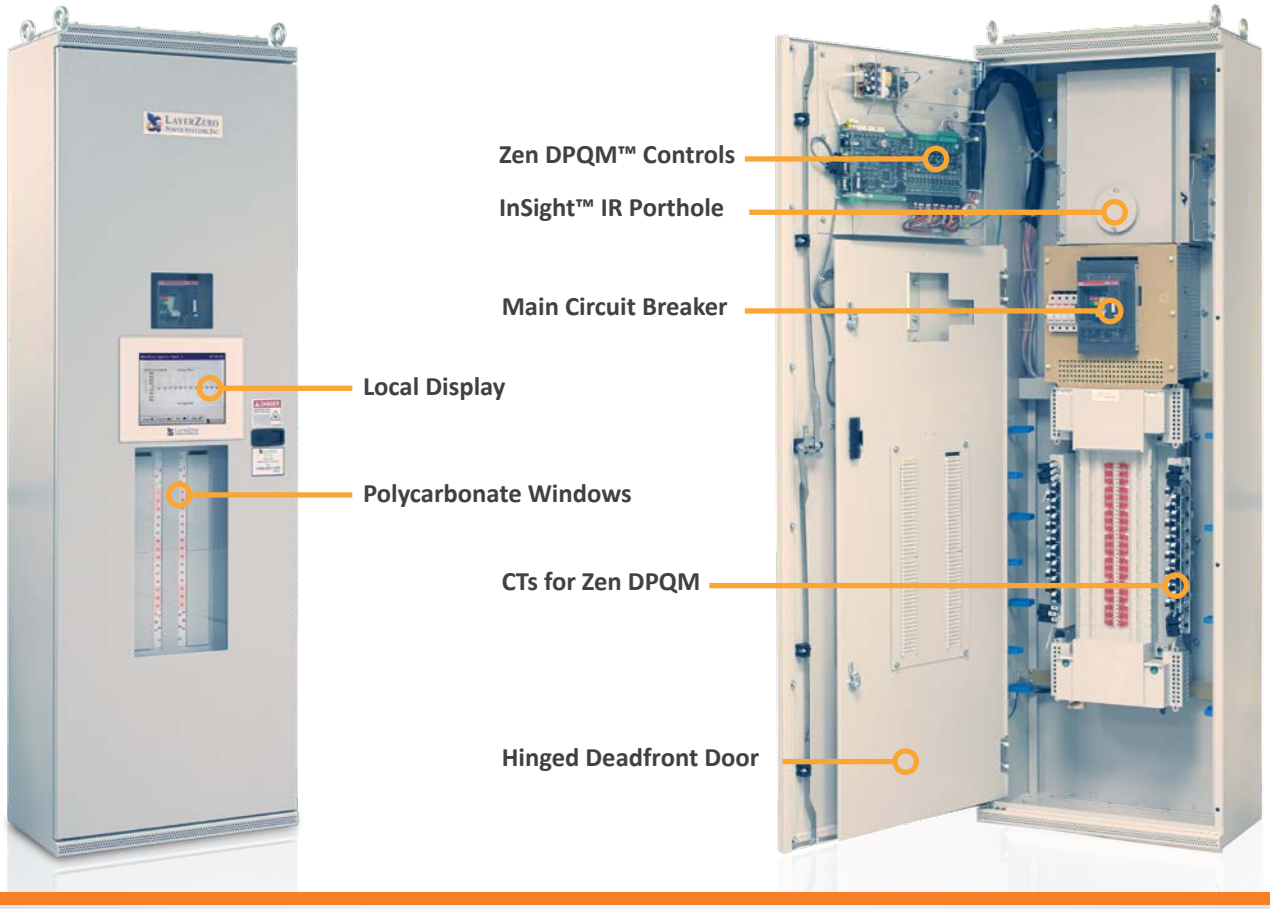
ePODs: Type-X SF PDU



How to Read the Curve

On the y-axis you will see the % of nominal voltage, and the x-axis represents time typically shown using a logarithmic scale. As long as the voltage is contained within the boundaries the load will be maintained and there will be no damage to connected equipment. The examples above events plotted both within the boundaries.

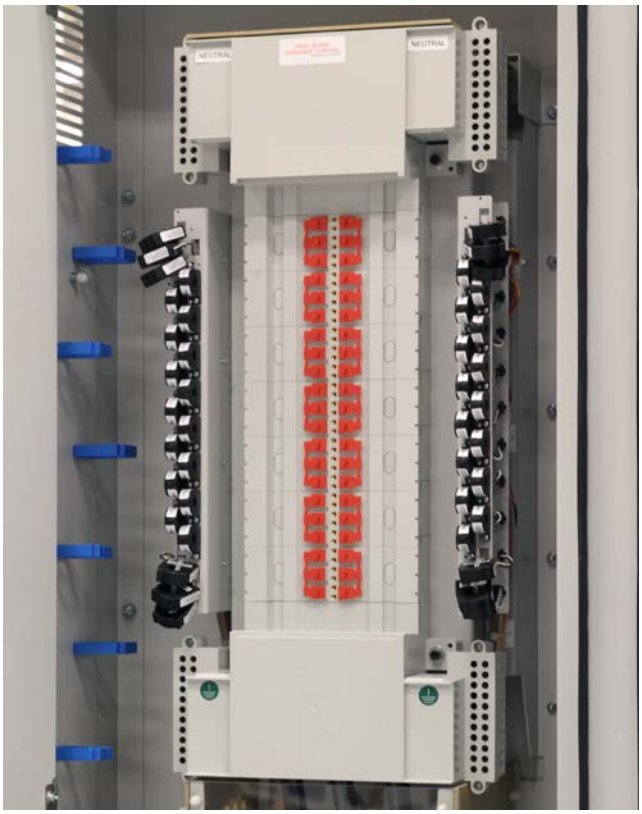
Equipment Layout



Selective Trip Coordination

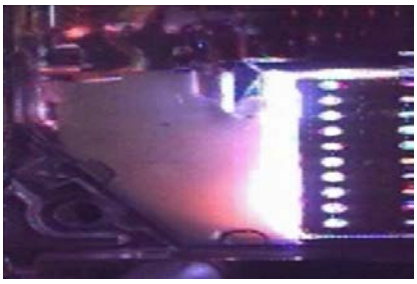
LayerZero Series 70 eRPP-SL1 Remote Power Panels are selective trip coordinated.

Selective Trip Coordination ensures that the main breaker will remain unaffected by the branch circuit breakers in the event of a downstream fault.



The Fault Current Opens the Solenoid Magnet, Causing The Contacts To Part

Unequal Pressure on Each Side of The Arc Causes the Plasma Wave To Rotate Away From The Contacts



The Plasma Wave is Driven into 12 Evenly Spaced Dividers

The Plasma is Rapidly Cooled

Transient Voltage Attempts To Re-Strike The Arc, But The Plasma Is Again Pushed Into The Dividers

When Sufficiently Cool, Charged Particles Recombine And The Fault Current Is Stopped Quickly & Safely

Ease of Maintenance

Silver Plating

LayerZero utilizes silver plating on all bus joints and 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 Status LEDs and Distribution CB Positions With Dead-Front Doors Closed

The Series 70: eRPP-SL1 is equipped with polycarbonate windows located on the outer door.

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

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.

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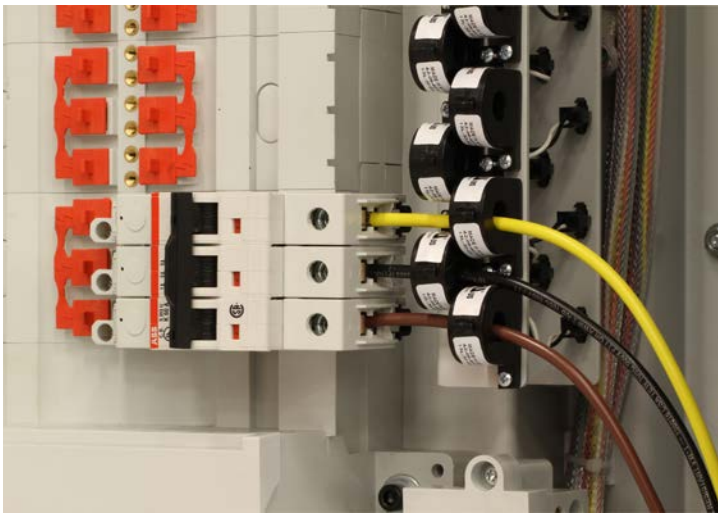
Safety Features

Circuit Breaker Shrouds

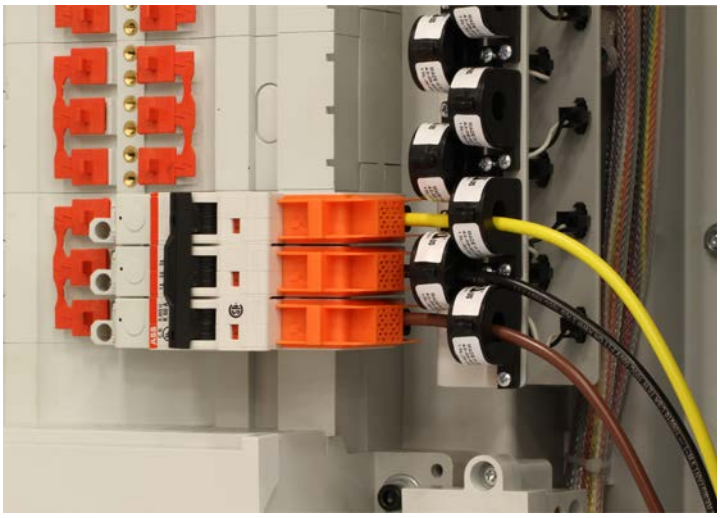
LayerZero Series 70 eRPP-SL1 Remote Power Panel provides optional circuit breaker shrouds, designed to eliminate exposure to live parts.

No Exposed Live Parts

LayerZero's patent-pending Circuit Breaker Shrouds cover exposed wiring, maximizing operator safety.



Wiring Without Shrouds Leaves Wiring Exposed



Circuit Breaker Shrouds Maximize Operator Safety

Safety Features

The LayerZero Finger-Safe SafePanel™

The Series 70 eRPP-SL1 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.

Isolated, Non-Conducting Brass Screws

The Protective Cover Is Removed

The Breaker Is Inserted Into The Opening

The Breaker Snaps Into The DIN Rail

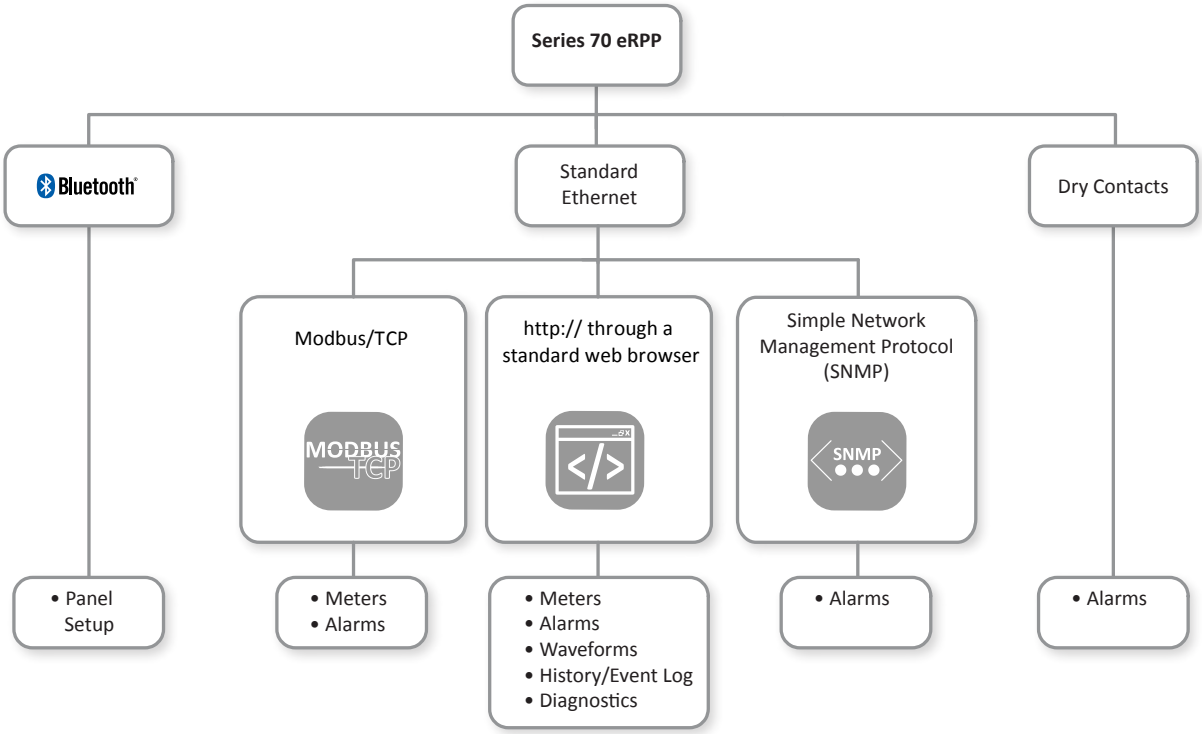
The Breaker Is Secured With An Isolated, Non Conducting Screw

Connectivity Options

Bluetooth Keeps Panel Board Names Up-To-Date

Coordinate efforts to keep panel board naming conventions accurate and up-to-date with Bluetooth connectivity. In critical facilities, Facilities typically install the physical circuit breakers, while IT workers manage naming of panel designations.

With Bluetooth connectivity, the naming of circuit breakers can be taken care of at the point-of-impact, bringing together the efforts of facilities and IT for more accurate panel names.



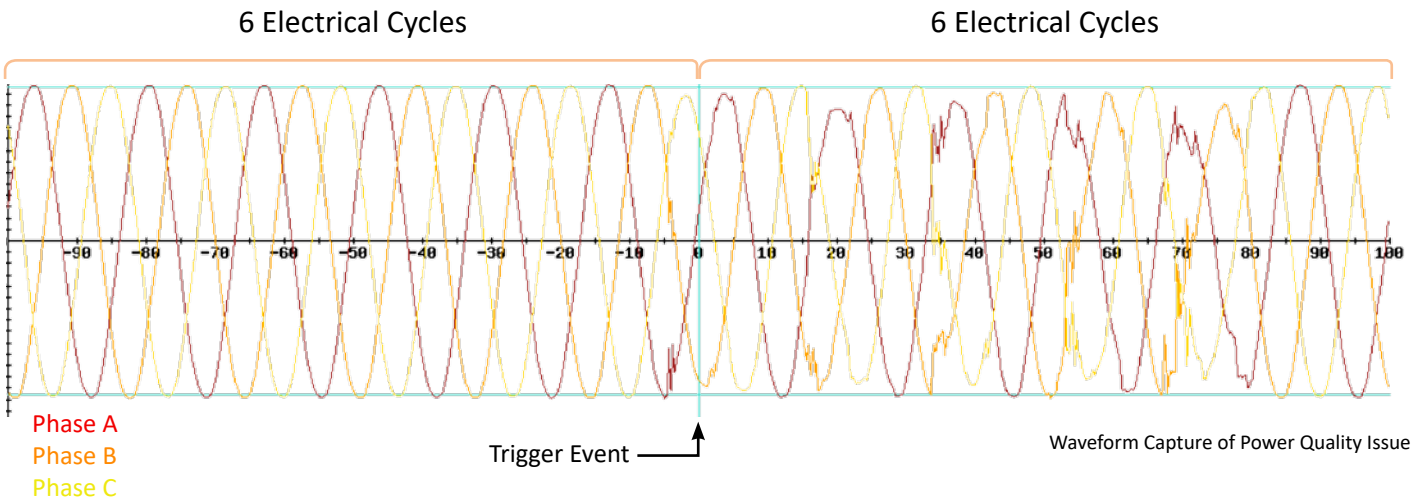
zen DPQM

The Series 70 eRPP-SL1 is equipped with Zen DPQM (Distribution Power Quality Monitoring), an all encompassing monitoring system with local and remote communications options.

From basic monitoring & alarm reporting, to advanced power quality monitoring functionality, Zen DPQM provides a wide-range of options to help you be aware, be vigilant, be proactive in your quest to create a safe, stable and reliable operation.

Zen DPQM Provides Answers

Zen DPQM provides timestamped pictures of waveforms before and after events, providing information that enables facilities to go back in time to methodically identify and correct the root causes of events. Zen actively captures power quality information at the STS, PDU, and RPP - permitting thorough post-event analysis.



Technical Specifications

zen DPQM

Zen 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.

eRPP-SL1 Models with System Withstand Ratings	
120/208 V, 3-phase, 4-wire + Ground	35 kA
220/380 V, 3-Phase, 4-Wire + Ground	14 kA
230/400 V, 3-Phase, 4-Wire + Ground	
240/415 V, 3-Phase, 4-Wire + Ground	
277/480 V, 3-Phase, 4-Wire + Ground	
480 V, 3-Phase, 3-Wire + Ground	

Mechanical Characteristics	
Dimensions	23.25”W x 71”H x 12“D (590.55 mm x 1803.4 mm x 304.8 mm)
Weight	340 lbs (154 kg)
Enclosure Mounting	Free-Standing, Wall-Mounted
Frame Construction	Welded Frame
Internal Electrical Connections	Flexible Laminated Bus, Silver-Plated Solid Busbar
Color	Textured Powder Coat White (RAL 7035), Blue (RAL 5017), Black, Custom
Seismic Floor Anchors	Optional
Seismic Floor Stand	Optional
Sectionalization	Engineered Composite Insulation, Dead Front Doors
Circuit Breaker Identification	Labels Viewable Through Polycarbonate Window
Electrical Characteristics	
Input Voltage	120/208 V, 3-phase, 4-wire + Ground; 220/380 V, 3-Phase, 4-Wire + Ground; 230/400 V, 3-Phase, 4-Wire + Ground; 240/415 V, 3-Phase, 4-Wire + Ground; 277/480 V, 3-Phase, 4-Wire + Ground; 480 V, 3-Phase, 3-Wire + Ground
Circuit Breaker Mounting Type	Fixed, Plug-In
Frequency	50 Hz, 60 Hz
Poles	3-pole, 4-pole
Input Feeder Termination	Two-Hole, Compression Nema Hole Pattern; Single Mechanical; Dual Mechanical
Neutral Rating	100%, 200%
Number of Output CBs	42-Circuit
Distribution	SafePanel™ Distribution
Power Quality Monitoring	
Power Quality Monitoring Technology	Zen DPQM™ (Distribution Power Quality Monitoring)
Waveform Capture	Local Display, Remote Display via Web Browser

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Technical Specifications

Operational Characteristics	
Cooling	Convection Cooling
Cable Access	Top/Bottom
Service Access	Front and Top Only Access
IR Scan Port Type	InSight™ IR Portholes on Input
Display Type	3.2” LCD with Membrane,
Connectivity	
Meters	Local Display, Ethernet, Modbus/TCP, http via Web Browser (Non-Proprietary)
Alarms	Local Display, Ethernet, 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 and cETL listed to UL 60950, UL 67
CSA	CSA 22.2

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Learn more at www.LayerZero.com

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