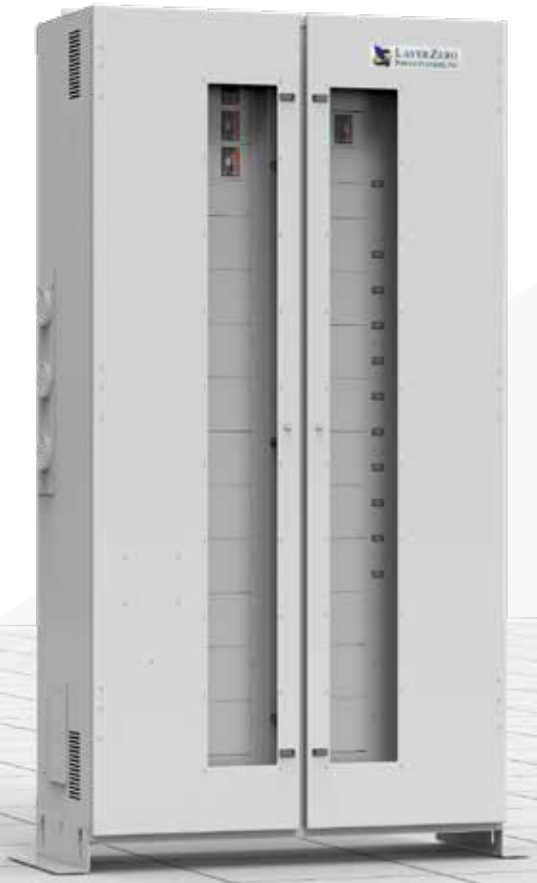
LayerZero Power Systems, LLC.

The Foundation Layer

Series 70 ePanel-HD2

High-Density Wall-Mounted Remote Power Panel



Product Brochure

Be Ready For *Ultra* High-Density Requirements With ePanel-HD2 High-Density RPP

ePanel-HD2 Ensures Your Power Distribution Infrastructure Is Ready For Ultra High-Density

The Series 70 ePanel-HD2 is designed for environments requiring higher kW capacity from three-phase branch breakers. Designed with NFPA-70E operator safety in mind, it features an IP-20 (finger-safe) modular latticework that allows the addition of 15A-100A three-pole circuit breakers without exposing live bus, providing up to 30 kW per breaker. Standard capabilities include guaranteed selective trip coordination, Bluetooth connectivity, and waveform capture, with Modbus/TCP, SNMP, and HTTP protocols supported for seamless communication and monitoring.

- 400 A, 800 A
- 100 kAIC @ 240 VAC
- 65 kAIC @ 480 VAC

Reliability

Convection Cooling:
Natural Convection-Cooled Heat Dissipation System is Maintenance-Free

Machined Hardware:
Machined Cap Screws and Engineered Disc Springs Maintain Constant Torque Throughout Product Life

Serialized Critical Board Tracking:
Critical Boards Are Serialized And Cataloged in an Active Database For Traceability

Safety

INSIGHT IR® Cameras:
Built-in Infrared Cameras to Continuously Scan Bolted Connections For Irregular Rises In Temperature

Sectionalized Components:
Separations Between Each Section To Maintain Maximum Operator Safety

Polycarbonate Windows:
Allows Critical Board LEDs To Be Viewed With The Dead-Front Door Closed

Guided Wireways:
Helps Keep Wires Organized

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 with No Exposure to Exposed Live Parts

Connectivity

Ethernet Connectivity:
Secure VPN Router Connects To Network For Advanced Remote Monitoring Capabilities

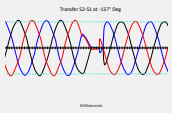
Modbus/TCP:
Open Connectivity to Existing Monitoring Systems Without Proprietary Limitations

NTP Time Clock Synchronization:
Facilitates Timeline-Based Logging For Post-Event Reconstruction

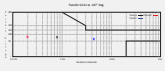
SNMP Connectivity:
Permits Remote Management Via Simple Network Management Protocol

Dry Contacts:
Access Alarms Data with Dry Contacts Connections

Power Quality Monitoring



Real-Time Waveform Capture:
Automatically Captures A Picture Of The Power Six-Cycles Before and After Every Event



ITIC Plotting:
Generate ITIC Plots To Determine if Connected Equipment Was Affected by Power Quality Events

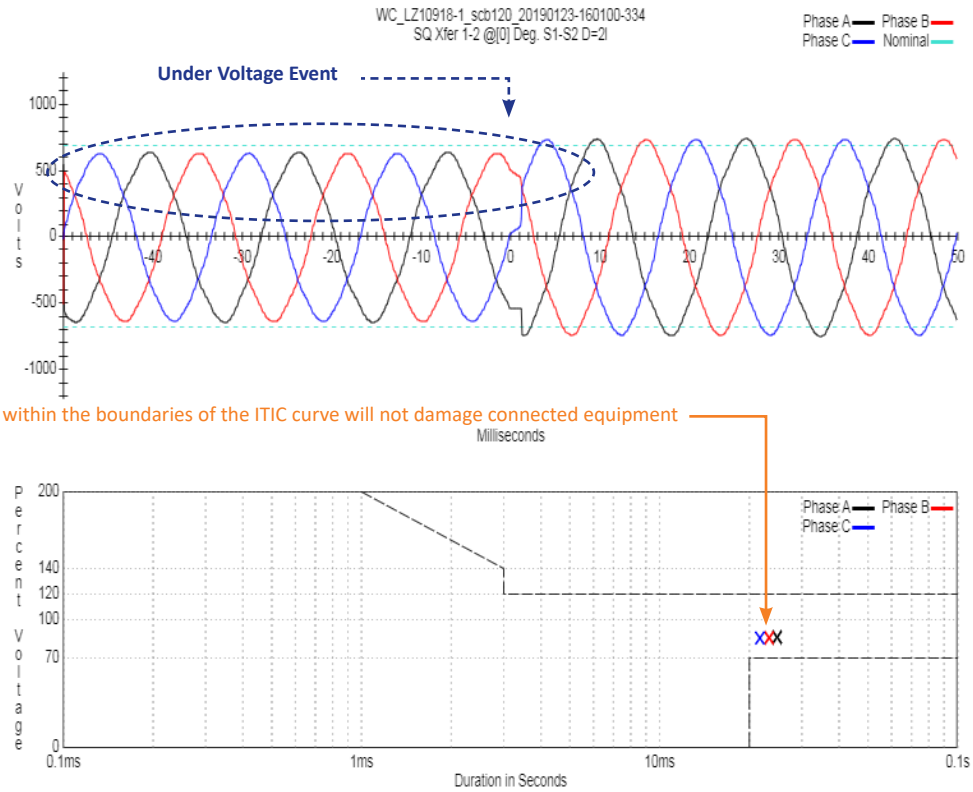
Optional Local Touch-Screen Interface:
Password-Protected Color Touch-Screen GUI For Local STS Setup/ Operation/Administration

Every LayerZero product samples power sources to perform detailed power quality analysis, accessible remotely through a standard web browser.

The example shown below illustrates a “voltage sag” factory test conducted on a LayerZero Series 70 ePODs: Type-X PDU. Each phase, represented by a colored line, plots voltage over time. In this instance, all three phases dropped below a user-defined threshold, triggering an undervoltage event, an automatic waveform capture, and an ITIC plot.

On all LayerZero PDUs and RPPs, waveforms and ITIC plots are generated for every phase, on every circuit, for every event, ensuring full visibility and traceability of power quality.

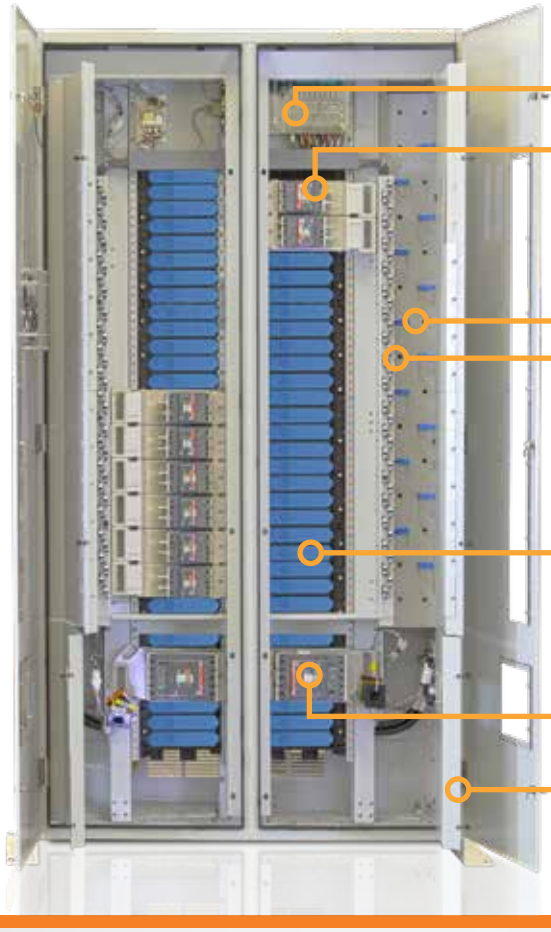
ePODs: Type-X SF PDU



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



Built-In Power Quality Monitoring

Branch Circuit Breakers

- 240V
- 480V

Guided Wireways

CTs for LayerZero DPQM

SafePanel® Panel Board

Main Circuit Breakers

Dead Front Doors

ePanel-HD2 Supports Top or Bottom Cable Entry.

Reliability Features/Safety Features

Silver Plated Terminals

LayerZero utilizes silver plating on all bus joints to deliver maximum performance. Silver's high conductivity and low resistance ensure superior electrical contact and reliability under demanding conditions.

Silver-Plated Customer Connections

Machined Hardware

All bolted connections use precision-machined cap screws and engineered disc springs, producing a flat pressure-versus-deflection profile that maintains consistent torque throughout the product's lifespan.

These technologies have been extensively tested across wide temperature ranges to ensure that once connections are tightened, they remain secure.

Machined Cap Screws and Engineered Disc Springs
Utilized in LayerZero Power Systems Products

Serialized Circuit Boards

Every critical circuit board and memory card is serialized and tracked through the LayerZero eBOSS portal, providing complete traceability. Customers can view detailed component information, including test data, technician records, and notes from quality assurance. Serialized tracking also enables predictive maintenance, allowing potential component failures to be analyzed and cross-referenced with similar parts, helping ensure continuous uptime and system reliability.

Serialized "Panel Board Monitor" (PBM) in an ePanel-HD2

Safety Features

Dead-Front Hinged Doors Maximize Operator Safety

The Series 70 ePanel-HD2 is designed with dead-front hinged doors, allowing operators to safely access and operate circuit breakers without exposure to energized components.

Sectionalized Components Help Maximize Operator Safety

To further maximize operator safety, the ePanel-HD2 features sectionalized construction with clear physical separation between main and branch circuit breakers. Polycarbonate viewing windows provide visibility into key components while maintaining full protection from live parts.

View CB Positions With Dead-Front Doors Closed

Inspired by NFPA-70E safety standards, the Series 70 design enables operators to view circuit breaker positions even with the dead-front doors closed.

This design drastically reduces exposure risk during operation and maintenance in mission-critical environments.

Safety/Convenience Features

The LayerZero SafePanel®

The Series 70 ePanel-HD features an IP-20, finger-safe panel board designed to prevent ingress of a ½" (12.5mm) diameter probe for maximum operator safety.

When two live conductors are separated, such as during the removal of a circuit breaker, an arc can form. The SafePanel® design ensures that any potential arc is contained within the connection well, providing an extra layer of protection.

With deeply isolated components and insulated connections, breaker removal is both safe and straightforward.

Finger-Safe SafePanel® Subfeed Panel Board

ePanel-HD 1200 A Circuit Breaker Installation Process

The Breaker Is Inserted Into The SafePanel

The Handle Is Unlocked

Screws Help Secure The Breaker

For Maximum Safety, The SafePanel Has Recessed Bus Work and Finger Safe Lattice.

High Density Distribution

The LayerZero Series 70 ePanel-HD2 is a high-density Remote Power Panel designed for mission-critical applications, including data centers and facilities requiring ultra-high-density power distribution. Its robust design ensures reliable performance in demanding environments.

ePanel-HD2 is a High-Density Power Panel

Guided Wireways

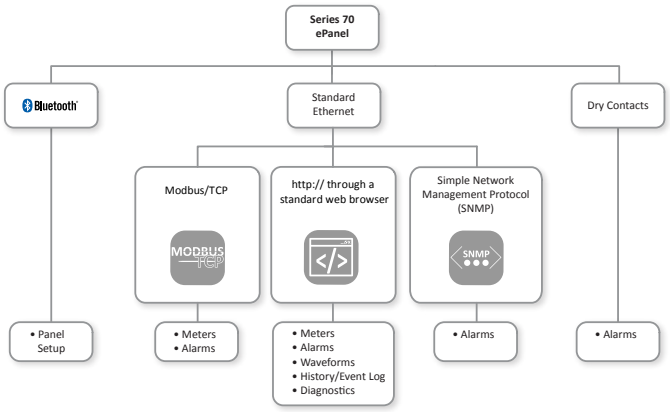
Integrated guided wireways and cable clips help maintain organization and ensure a clean, structured layout for all wiring and cable management needs.

Guided Wireways in the ePanel-HD2

LZ DPQM

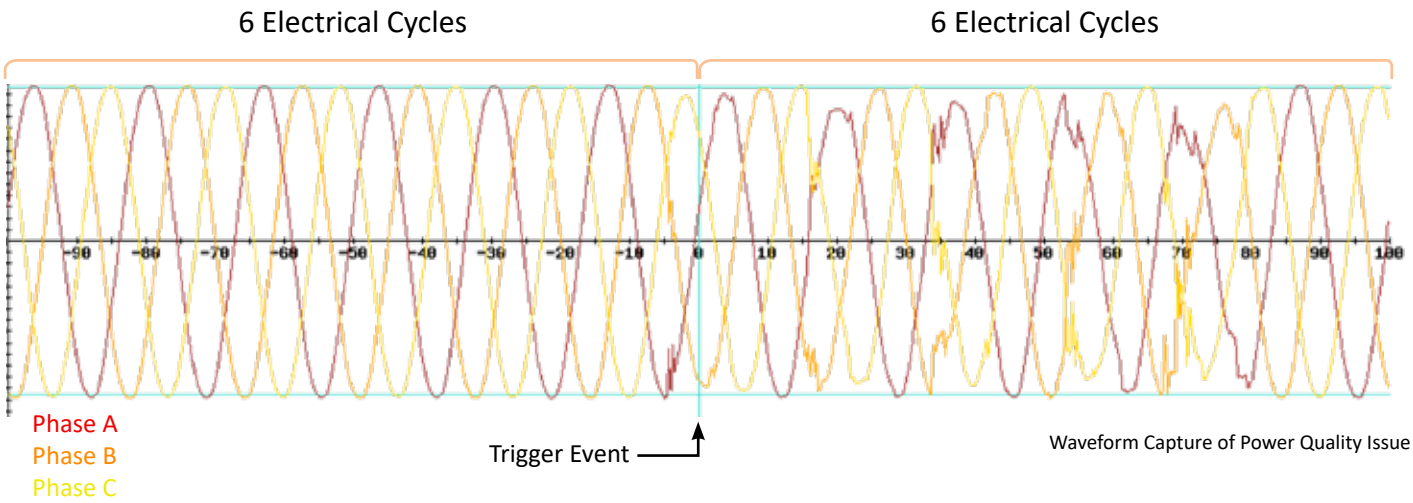
The Series 70 ePanel-HD is equipped with LayerZero DPQM, an all-encompassing monitoring system offering both local and remote communication options.

From essential monitoring and alarm reporting to advanced power quality analysis, LayerZero DPQM delivers a wide range of tools to help you stay awake, vigilant, and proactive in maintaining a safe, stable, and reliable operation.



LayerZero DPQM Provides Answers

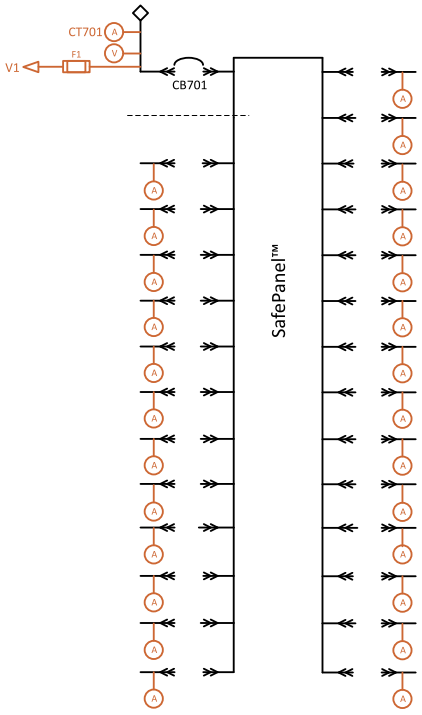
LayerZero DPQM captures timestamped snapshots of waveforms before and after power events, enabling operators to analyze and identify the root causes of disturbances. Power quality data is continuously recorded at the STS, PDU, and RPP levels, allowing for detailed, post-event analysis and informed corrective actions to enhance overall system reliability.

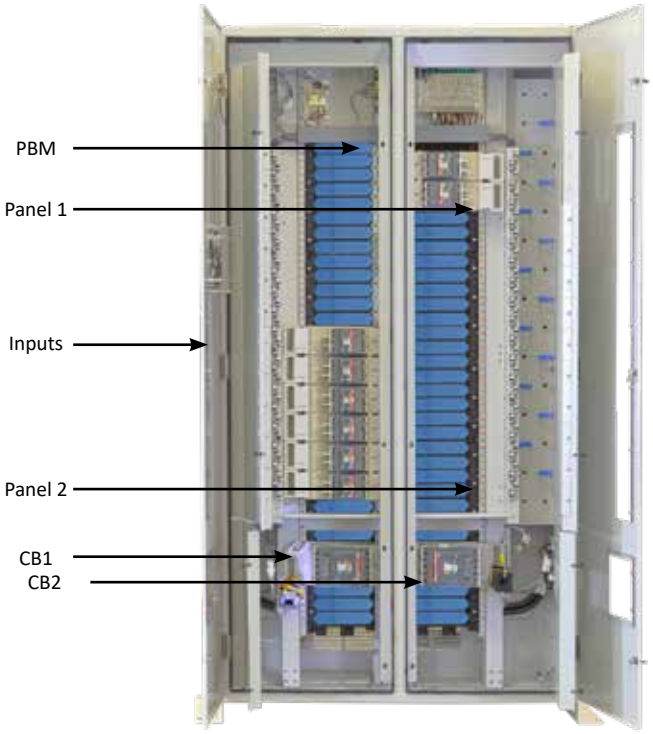


Waveform Capture of Power Quality Issue

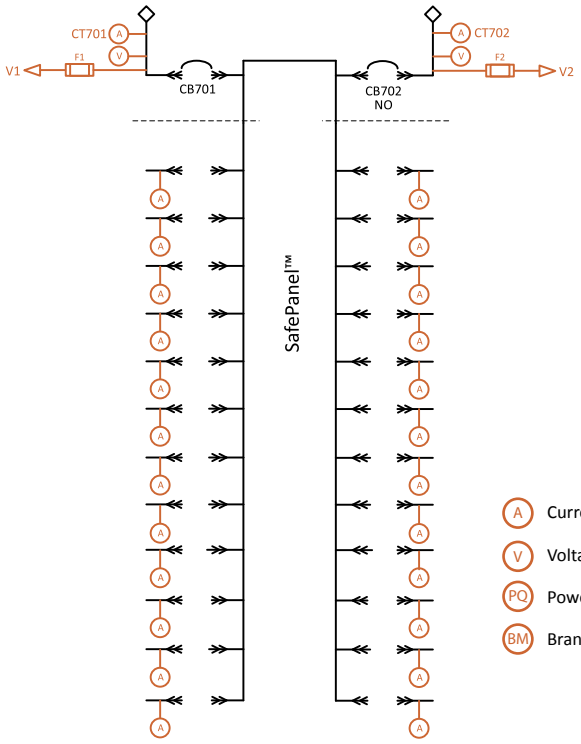
LZ DPQM

Series 70: ePanel-HD2 - Shared Parallel Configuration





Series 70: ePanel-HD2 - Feed Through Configuration



Series 70: ePanel-HD2 - Dedicated Configuration

- A — Current Metering Point
- V — Voltage Metering Point
- PQ — Power Quality Metering Point
- BM — Branch Current Monitoring

Technical Specifications

LZ 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 VTHD2 (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 VTHD2 (Warning)	✓	
	Over VTHD2 (Alarm)	✓	
	Phase Rotation (Alarm)	✓	

All product specifications are subject to change without notice.

Technical Specifications

ePanel-HD2 Models with System Withstand Ratings	
	Fault Rating at Rated Voltage - Electronic Trip, Molded Case Switch Main Circuit Breaker
120/208 V, 3-Phase, 4-Wire + Ground	65kAIC @ 240VAC; 100kAIC @ 240VAC
220/380 V, 3-Phase, 4-Wire + Ground	25kAIC @ 480VAC; 35kAIC @ 480VAC; 65kAIC @ 480VAC; 100kAIC @ 480VAC
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	
600 V, 3-Phase, 3-Wire + Ground	18kAIC @ 600VAC; 25kAIC @ 600VAC; 35kAIC @ 600VAC; 65kAIC @ 600VAC; 100kAIC @ 600VAC

Mechanical Characteristics		
Dimensions	48”W x 90”H x 20.5”D (1219.2 mm W x 2286 mm H x 520.7 mm D)	
Weight	550 lbs (250 kg)	
Enclosure Mounting	Wall-Mounted	
Frame Construction	Welded Frame	
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	
Panel Board Withstand	100 kA @ 208 V; 65 kA @ 480 V; 42 kA @ 600 V	
Configuration	1 Input, 2 Panel	2 Inputs, 2 Panels
	Shared Parallel (SP)	Dedicated (D), Feed Through (FT)
Frequency	50 Hz, 60 Hz	
Poles	3-pole	
Phases	3-Phase, 3-Wire (Input); 3-Phase, 4-Wire + Ground (Output)	
Neutral Rating	100%, 200%	
Circuit Breaker Type	Electronic Trip, Molded Case Switch, Thermal Magnetic Trip	
Input Feeder Termination	Two-Hole, NEMA Hole Pattern Compression	
Distribution	SafePanel® Distribution	
Power Quality Monitoring		
Power Quality Monitoring Technology	LayerZero DPQM (Distribution Power Quality Monitoring)	
Waveform Capture	Local Display, Remote Display via Web Browser	

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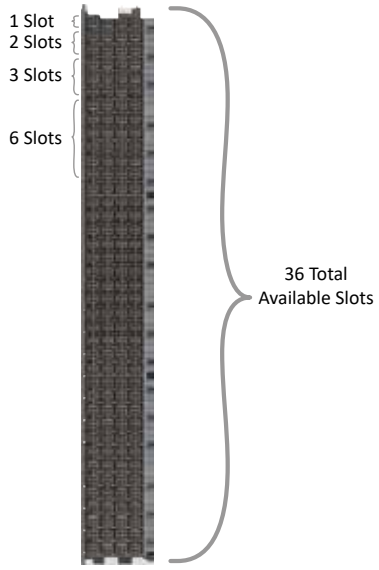
Technical Specifications

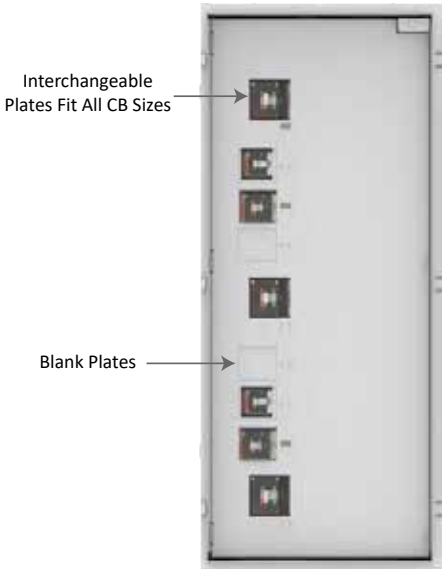
Operational Characteristics	
Cooling	Convection Cooling
Cable Access	Top/Bottom
Service Access	Front and Side Access
IR Scan Port Type	INSIGHT IR® Portholes
Display Type	3.2” LCD with Membrane, 10.5” Color Touch Screen GUI (Optional)
Connectivity	
Meters	Local Display, Ethernet, Modbus/TCP, http via 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

Number of Output Circuit Breakers	
Number of Available SafePanel® Slots	36
CB Rating	Number of Slots Required
100 AF	2
250 AF	3
400 AF	3
400 AF 100%	6
800 AF	6

SafePanel™ Panel Board



Universal Dead Front



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Learn more at www.LayerZero.com

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