

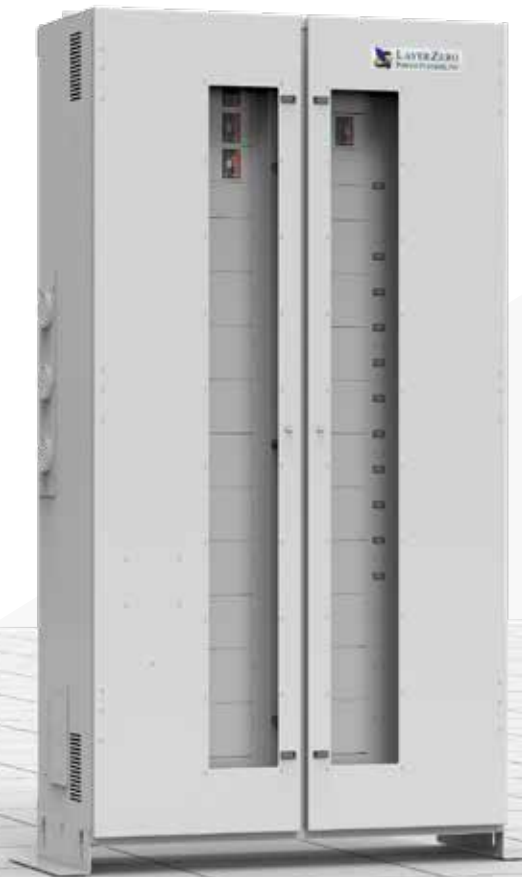


**LAYERZERO**  
POWER SYSTEMS, INC.

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

Our Series 70 ePanel-HD2 is designed for applications that require higher kW capacity from three phase branch breakers. NFPA-70E operator safety is built-in. The IP-20 (finger-safe) modular latticework allows for the addition of 15 A - 100 A three-pole circuit breakers without exposure to live bus provisioning excess of 30kW per breaker. Standard features include: Guaranteed selective trip coordination, Bluetooth, waveform capture Modbus/TCP, SNMP, HTTP protocols supported.



- 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



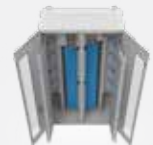
**Sectionalized Components:**  
Separations Between Each Section To Maintain Maximum Operator Safety



**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

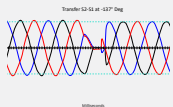
**Modbus/TCP:**  
Open Connectivity to Existing Monitoring Systems Without Proprietary Limitations

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

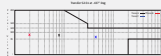
**SNMP Connectivity:**  
Permits Remote Management Via Simple Network Management Protocol

**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



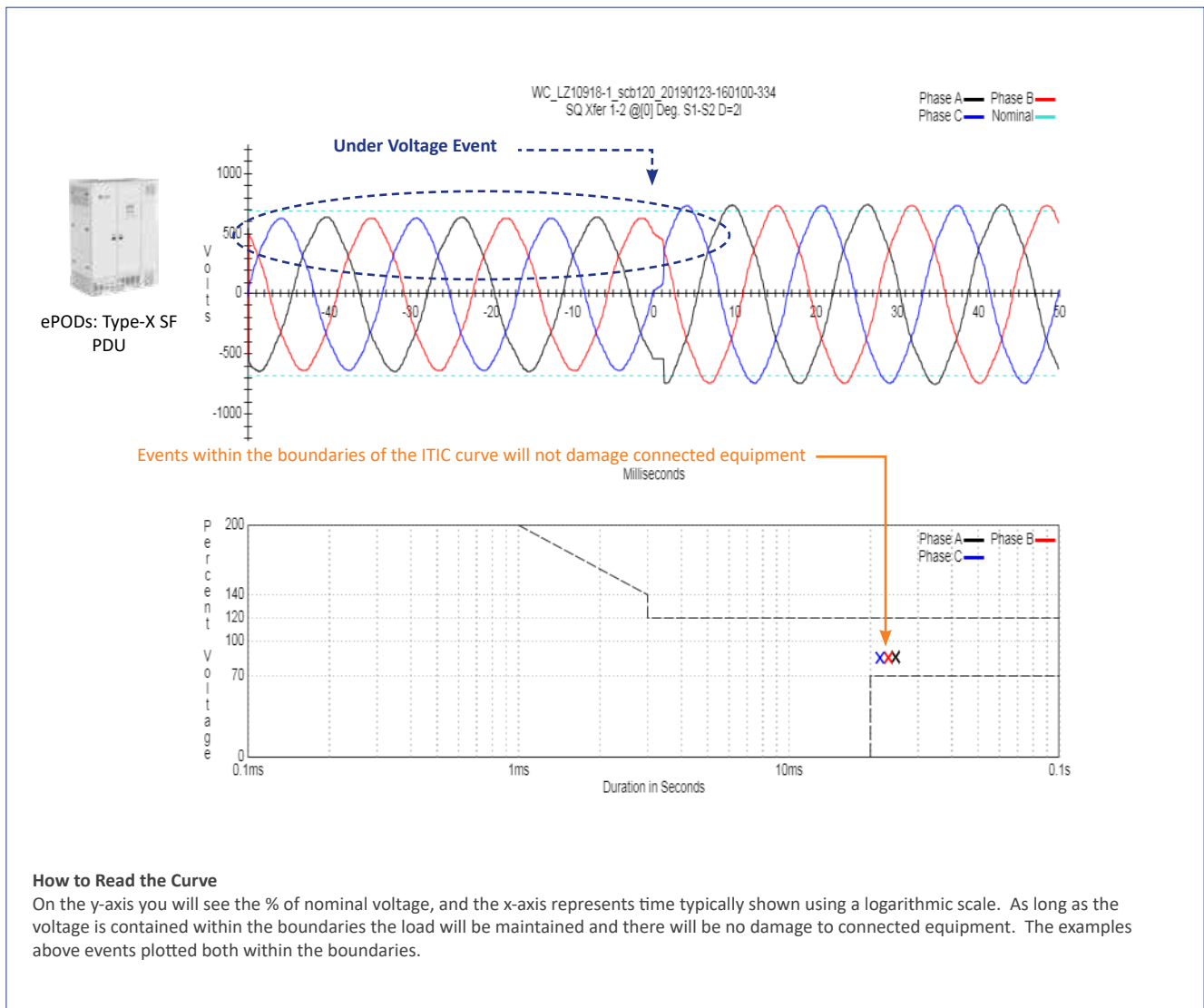
**Optional Local Touch-Screen Interface:**  
Password-Protected Color Touch-Screen GUI For Local STS Setup/Operation/Administration

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.

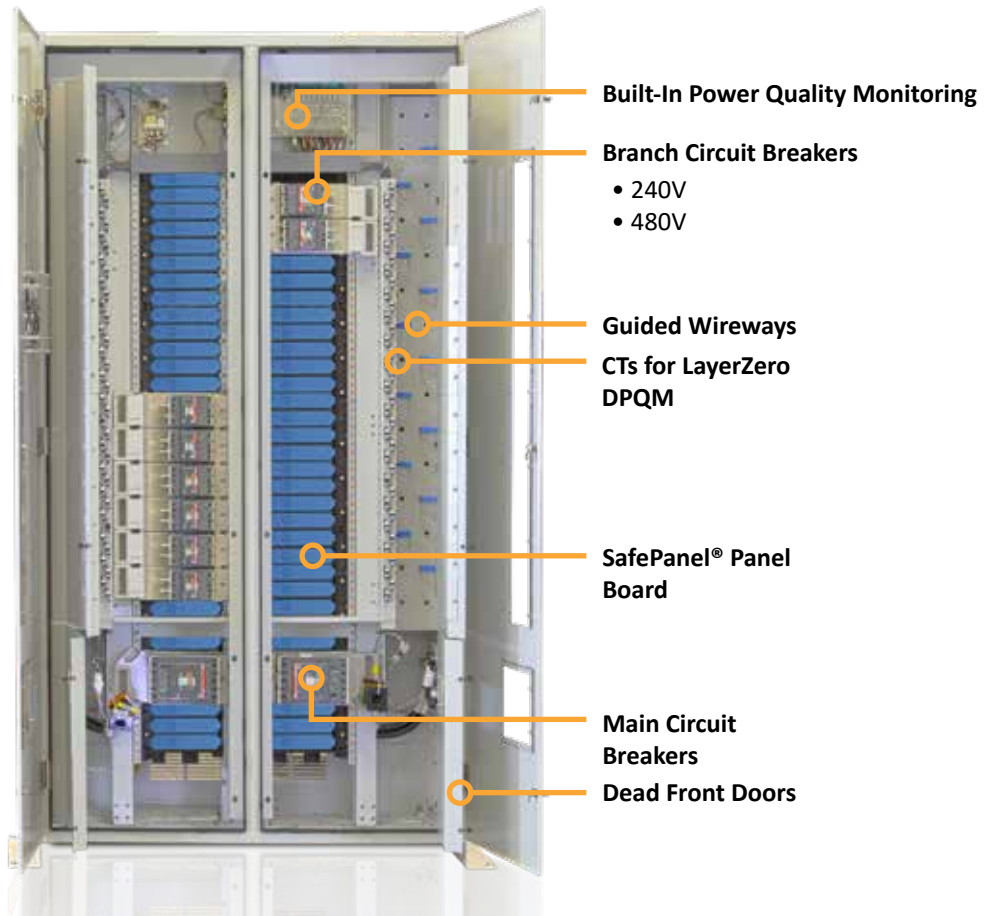
The following “voltage sag” factory test was performed on a LayerZero Series 70 ePODs: Type-X PDU. Each phase is represented by a colored line, plotting the voltage over a period of time.

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.



Equipment Layout



## Reliability Features/Safety Features

### Silver Plated Terminals

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



Silver-Plated Customer Connections

### 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.



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

### Serialized circuit boards

We serialize and track all critical circuit boards and memory cards through our eBOSS portal, which allows customers to reference which components their machines are made from, who tested the components, as well as the ability to view notes generated from testing.

Serialized components offer the ability to drill-down on prospective component failure utilizing predictive modeling techniques, so if part fails, the instance can be cross-referenced with similar parts. This preventative maintenance helps ensure maximum uptime.



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

Safety Features

**Dead-Front Hinged Doors Maximize Operator Safety**

The Series 70 ePanel-HD2 utilizes dead-front hinged doors. Dead-Front hinged doors allows for operation of circuit breakers safely.

**Sectionalized Components Help Maximize Operator Safety**

Operators are well-protected from exposed connections. There is a physical separation between the main circuit breaker(s) and branch circuit breakers. Polycarbonate windows are utilized to permit visibility and maximize operator safety.

There are no exposed live parts.



**View CB Positions With Dead-Front Doors Closed**

Our Series 70 product line was inspired by NFPA-70E, to help data centers drastically reduce the risks of their energy distribution systems.

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



Safety/Convenience Features

**The LayerZero SafePanel®**

The Series 70 ePanel-HD 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.



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**

LayerZero Series 70 ePanel-HD2 is a High Density Remote Power Panel, designed for critical power applications such as data centers and mission-critical environments. In addition, ePanel-HD2 is ready for *ultra* high-density applications.



ePanel-HD2 is a High-Density Power Panel

**Guided Wireways**

Help keep cables and wiring organized with our guided wireways and cable clips.



Guided Wireways in the ePanel-HD2

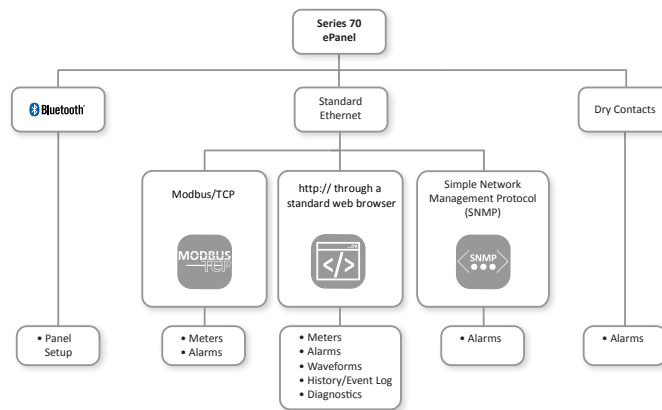


Power Quality Monitoring



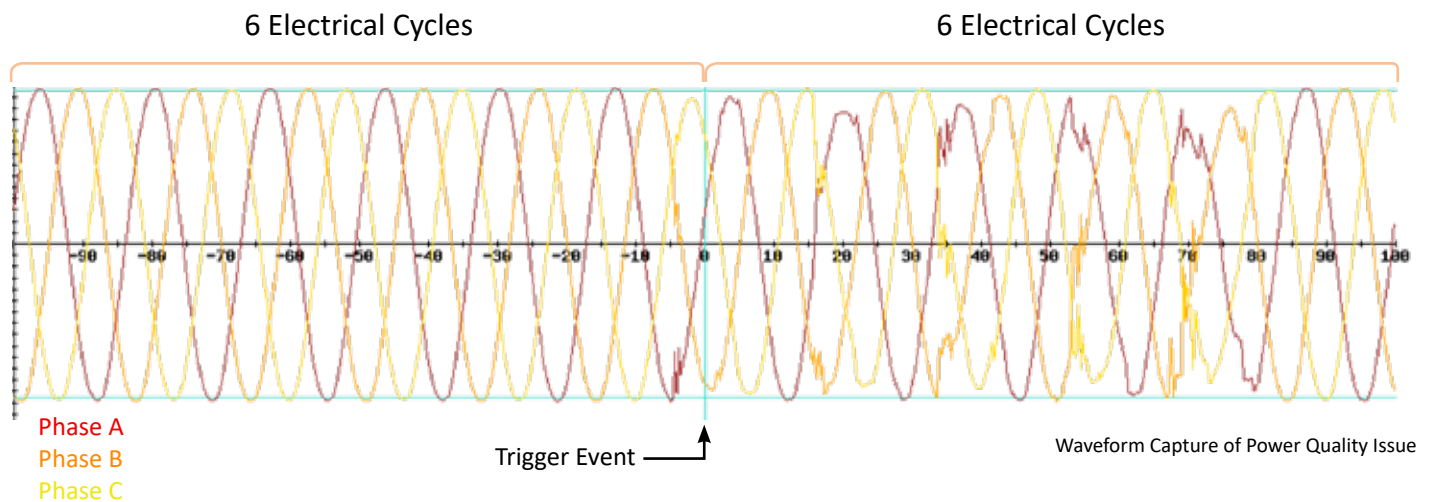
The Series 70 ePanel-HD is equipped with LayerZero DPQM (Distribution Power Quality Monitoring), an all encompassing monitoring system with local and remote communications options.

From basic monitoring & alarm reporting, to advanced power quality monitoring functionality, LayerZero 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.



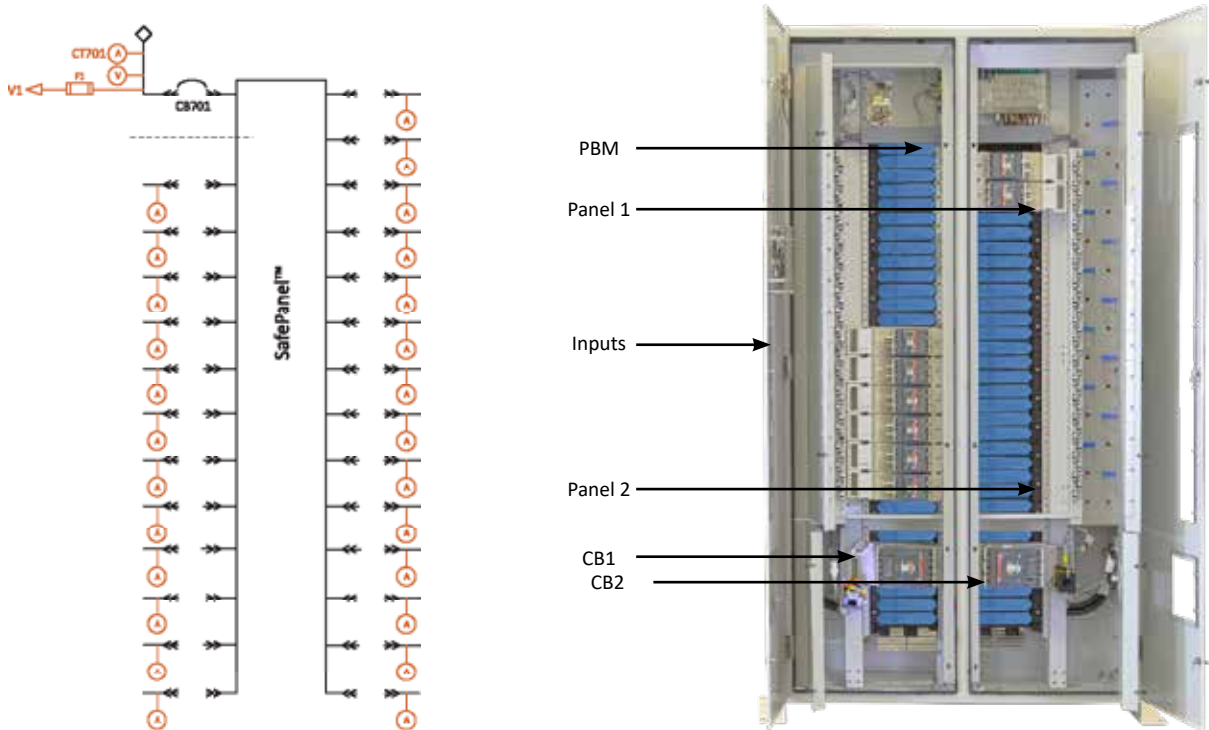
LayerZero DPQM Provides Answers

LayerZero 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. LayerZero actively captures power quality information at the STS, PDU, and RPP - permitting thorough post-event analysis.





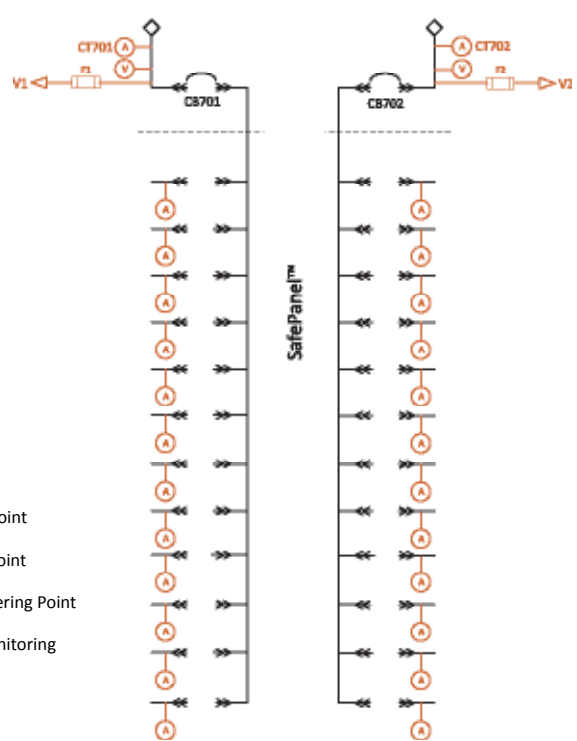
Series 70: ePanel-HD2 - Shared Parallel Configuration



Series 70: ePanel-HD2 - Feed Through Configuration



Series 70: ePanel-HD2 - Dedicated Configuration



Technical Specifications



LayerZero DPQM Parameters		Mains	Subfeeds or Branch Circuits
<b>Voltage Monitor</b>	Volts (L-L) Phase A/B/C (volts RMS)	✓	
	Volts (L-N) Phase A/B/C (volts RMS)	✓	
	Phase Rotation	✓	
<b>Current Monitor</b>	CT Reversed Phase A/B/C/N	✓	✓
	Current Phase A/B/C/N (amperes RMS)	✓	✓
<b>Power Monitor</b>	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)	✓	✓
<b>Power Quality</b>	Percent VTHD2 (percent)	✓	✓
	Waveform Capture	✓	✓
<b>Alarms</b>	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
	Shared Parallel (SP)
	2 Inputs, 2 Panels
	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

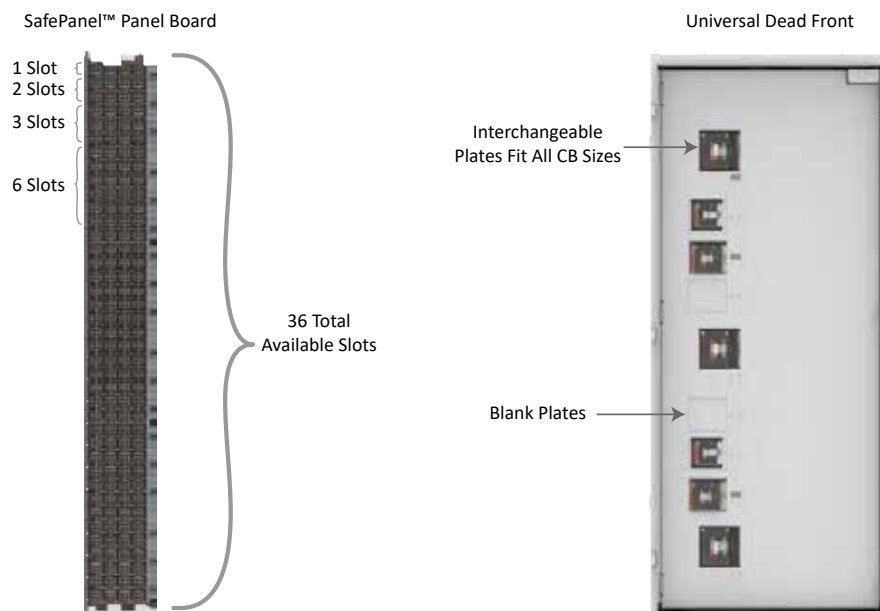
Power Quality Monitoring	
Power Quality Monitoring Technology	LayerZero DPQM (Distribution Power Quality Monitoring)
Waveform Capture	Local Display, Remote Display via Web Browser

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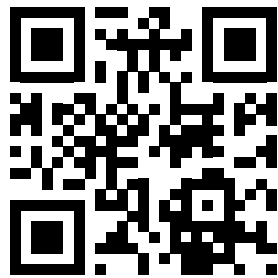
Technical Specifications

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



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Learn more at [www.LayerZero.com](http://www.LayerZero.com)



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Rev. 11/23