LayerZero Power Systems, Inc.

The Foundation Layer

Series 70 ePanel-HD1

High-Density Wall-Mounted Remote Power Panel

Product Brochure

Be Ready For *Ultra* High-Density Requirements With
ePanel-HD1 High-Density RPP

ePanel-HD1 Is Inspired by NFPA-70E

The Series 70 ePanel-HD1 is a High-Density Remote Power Panel for critical industries. It features an NFPA 70E friendly design, open layout, and the IP-20 rated Finger-Safe SafePanel, to help protect operators and ensure safe operation. With an emphasis on reliability, safety, connectivity, and power quality monitoring, the Series 70 ePanel-HD1 provides high-reliability power.

The Series 70 ePanel-1 is designed to be flexible, ideal for growing or constantly changing environments.
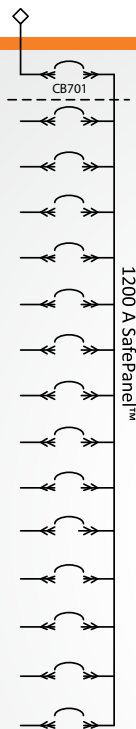
One Line Diagram

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:
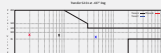Facilitates Timeline-Based Logging For Post-Event Reconstruction

SNMP Connectivity:
Permits Remote Management Via Simple Network Management Protocol

Dry Contacts:
Access Alarms Data with Dry Contacts Connections

Power Quality Monitoring
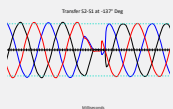
Real-Time Waveform Capture:
Automatically Captures A Picture Of The Power Six-Cycles Before and After Every Event
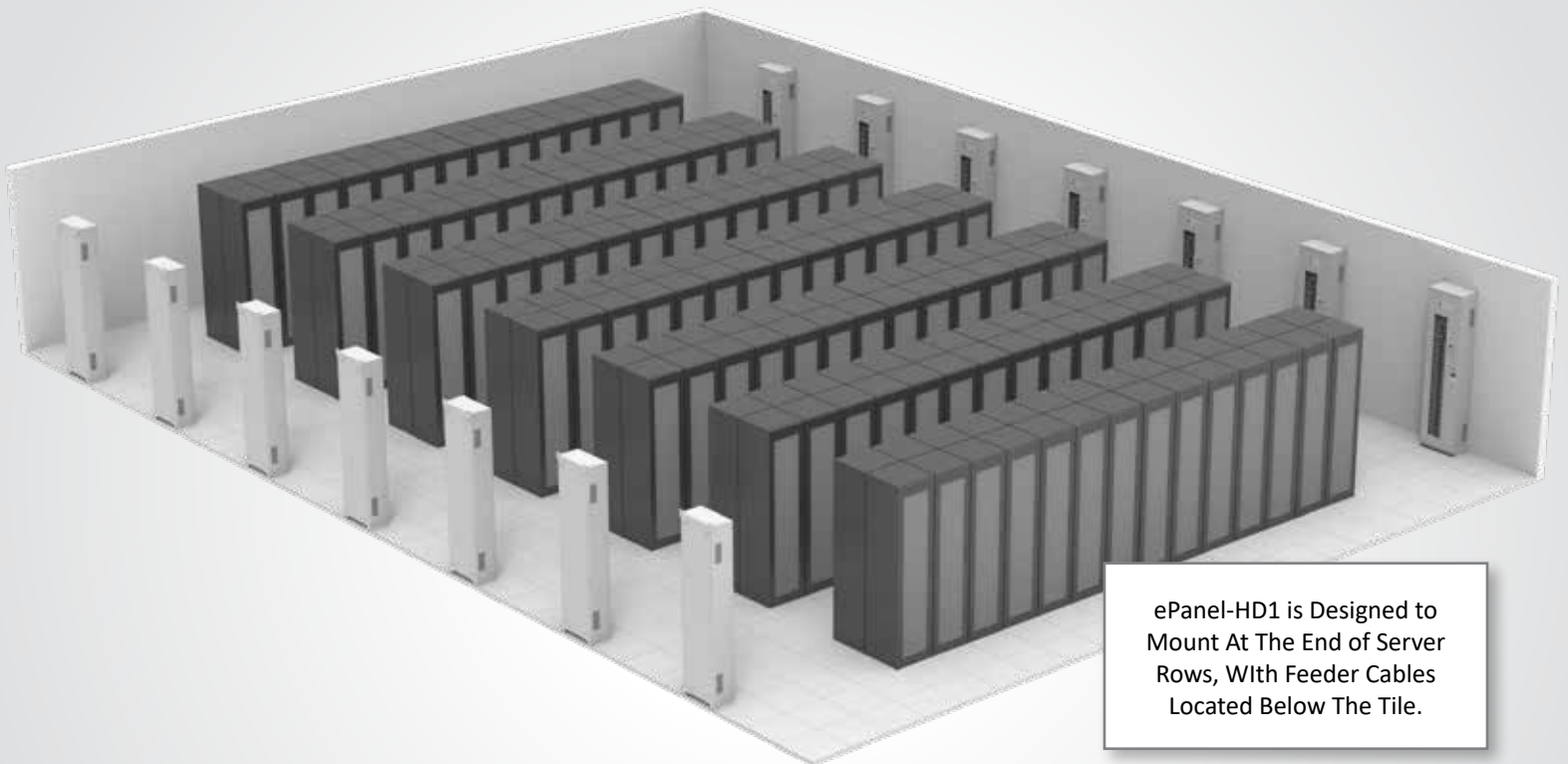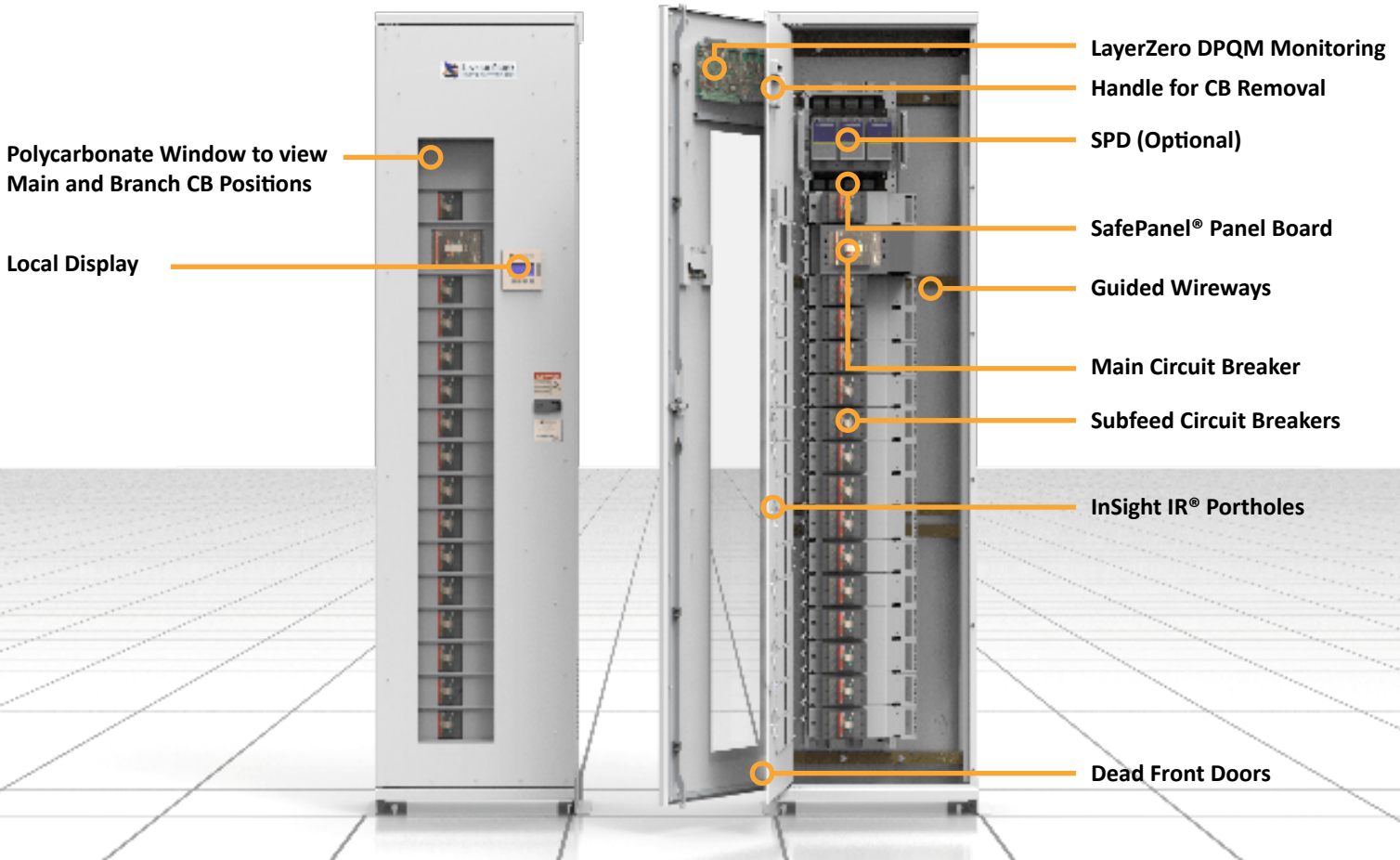
ITIC Plotting:
Generate ITIC Plots To Determine if Connected Equipment Was Affected by Power Quality Events

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

Equipment Layout

LayerZero DPQM Monitoring

Handle for CB Removal

SPD (Optional)

Polycarbonate Window to view Main and Branch CB Positions

SafePanel® Panel Board

Local Display

Guided Wireways

Main Circuit Breaker

Subfeed Circuit Breakers

InSight IR® Portholes

Dead Front Doors

ePanel-HD1 is Designed to Mount At The End of Server Rows, WIth Feeder Cables Located Below The Tile.

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Reliability Features/Safety Features

Floor or Wall Mounted Distribution

ePanel-HD1 has the option to be floor mounted or mounted on a wall.

Dead-Front Hinged Doors Maximize Operator Safety

The Series 70 ePanel-HD1 utilizes dead-front hinged doors.

Dead-Front hinged doors allows for operation of circuit breakers safely.

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Safety Features

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.

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.
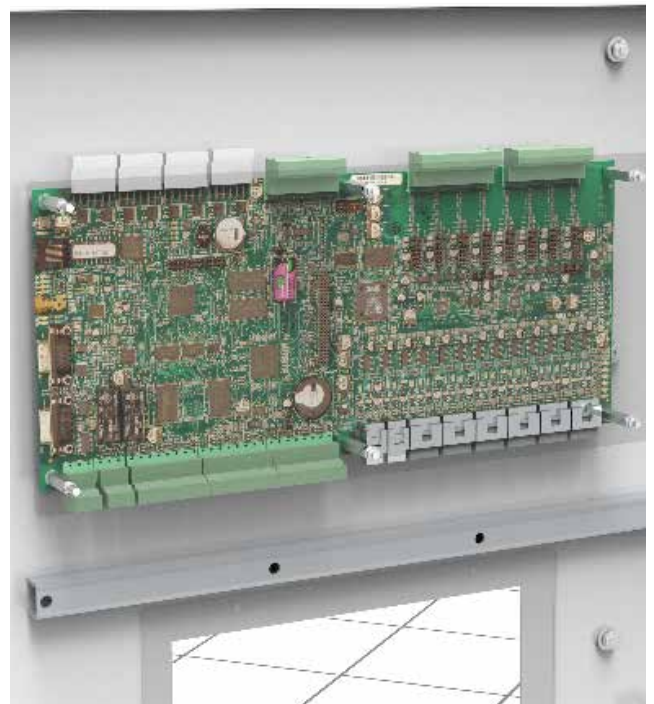
The LayerZero SafePanel®

The Series 70 ePanel-HD1 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-HD1 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.

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High Density Distribution

LayerZero Series 70 ePanel-HD1 is a High Density Remote Power Panel, designed for critical power applications such as data centers and mission-critical environments.
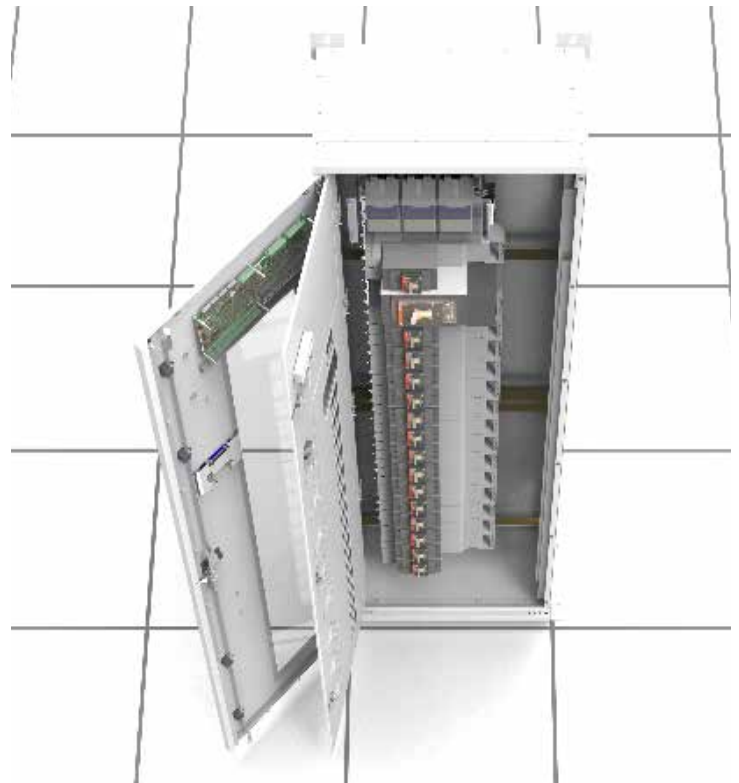
In addition, ePanel-HD1 is ready for *ultra* high-density applications.

High-Density Power Panel Circuit Breakers

Guided Wireways

Help keep cables and wiring organized with our guided wireways.

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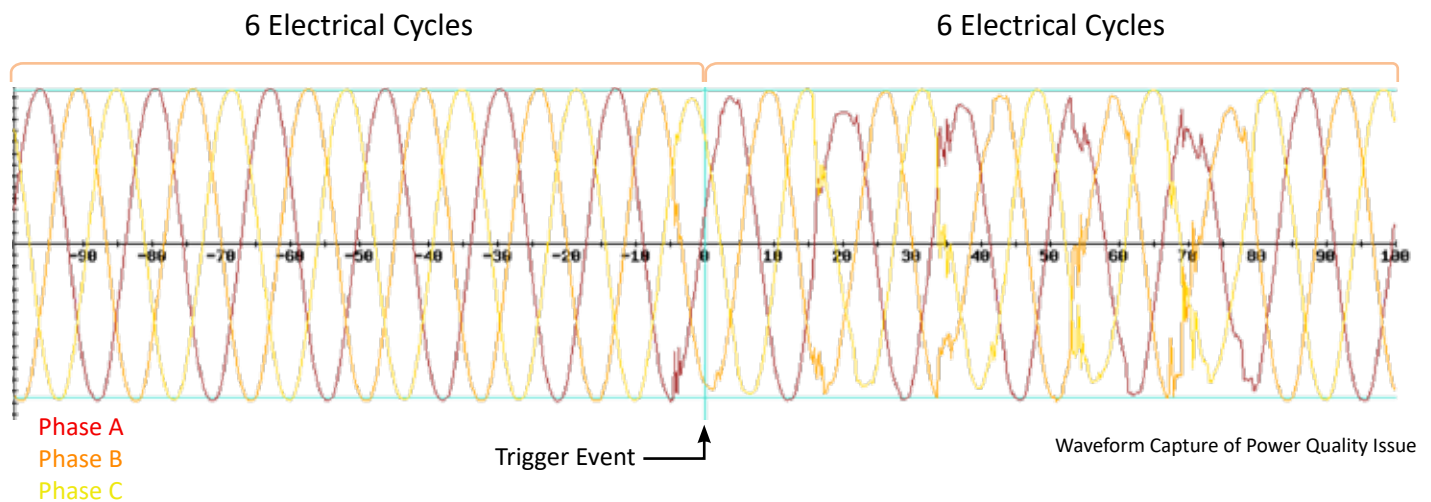
LZ DPQM

The Series 70 ePanel-HD1 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.

6 Electrical Cycles   6 Electrical Cycles

Phase A
Phase B
Phase C

Trigger Event

Waveform Capture of Power Quality Issue

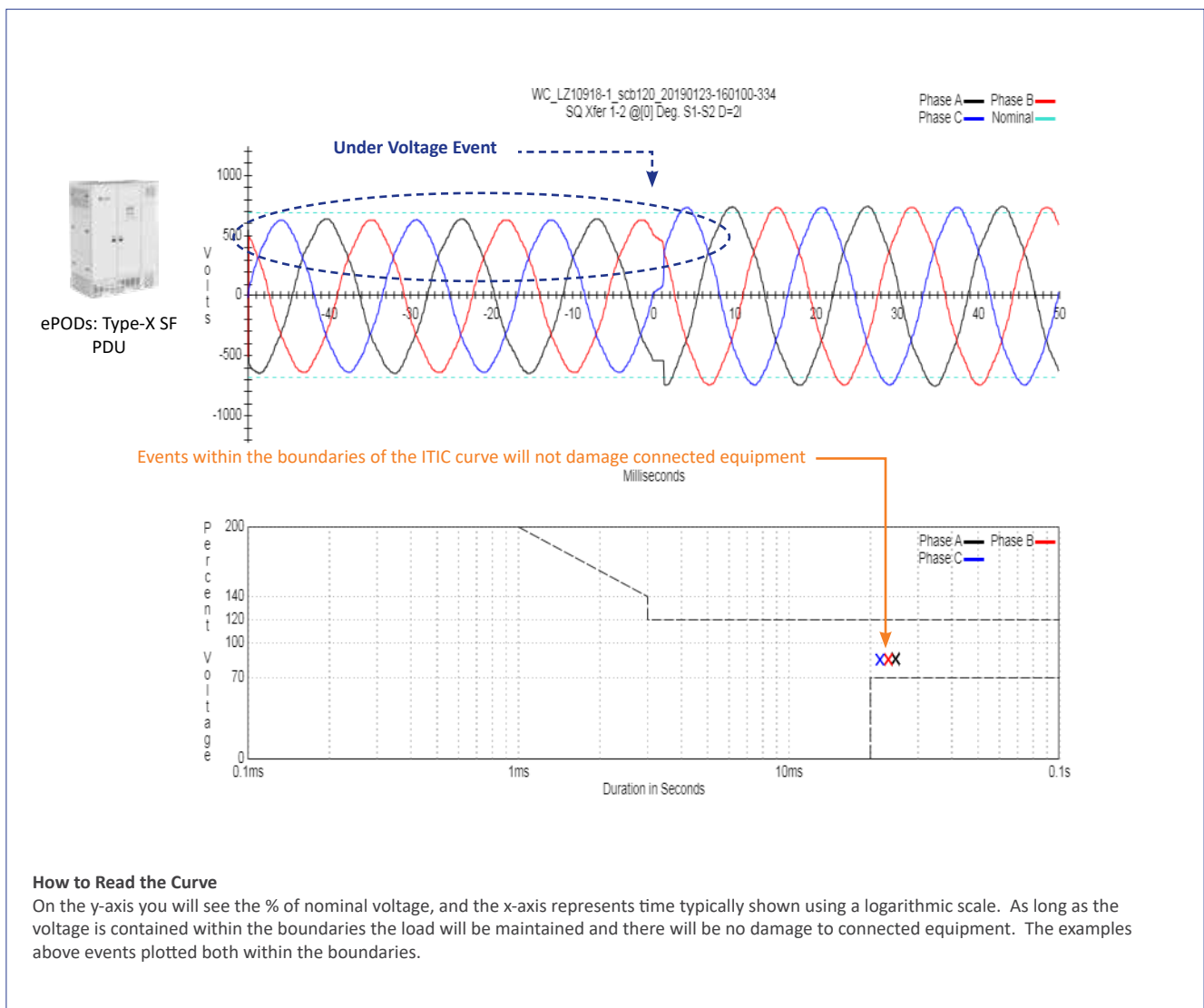   **LAYERZERO** POWER SYSTEMS, INC.

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.

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.

Technical Specifications

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 VTHD1 (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 VTHD1 (Warning)	✔	
	Over VTHD1 (Alarm)	✔	
	Phase Rotation (Alarm)	✔	
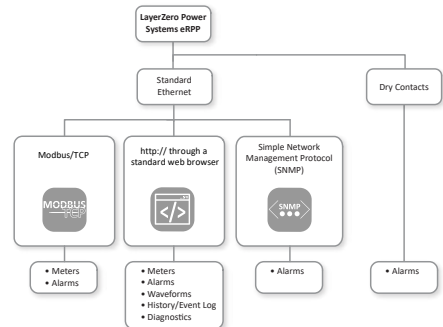
All product specifications are subject to change without notice.

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Technical Specifications

ePanel-HD1 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
220/380 V, 3-Phase, 4-Wire + Ground	25kAIC or 65kAIC
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:	24"W x 95"H x 12"D (609.6 mm W x 2286mm H x 304.8 mm D)
Weight	450 lbs (204 kg)
Enclosure Mounting	Wall-Mounted or Free Standing
Color	Textured Powder Coat White (RAL 7035), Blue (RAL 5017), Black, Custom
Sectionalization	Hinged Dead Front Doors with IR Ports
Circuit Breaker Identification	Labels Viewable Through Polycarbonate Window

Electrical Characteristics	
Panel Board Withstand	65 kA
Frequency	50 Hz, 60 Hz
Poles	3-pole
Phases	3-Phase, 3-Wire (Input); 3-Phase, 4-Wire + Ground (Output)
Neutral Rating	100%, 200%
Input Feeder Termination	Main Circuit Breaker Mechanical Lugs
Distribution	SafePanel® Distribution
Main Circuit Breaker Type	400 AF (100% Rating Available) Electronic Trip, or Molded Case Switch
Branch Circuit Breakers Type	15 A-100 A Thermal Magnetic
Selective Trip Coordination	Guaranteed Selective Trip Coordination up to 25 kAIC

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

Operational Characteristics	
Cooling	Convection Cooling
Cable Access	Top/Bottom
Service Access	Front Only 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 listed to UL 60950
CSA	cETL listed to Std C22.2 No. 107.1

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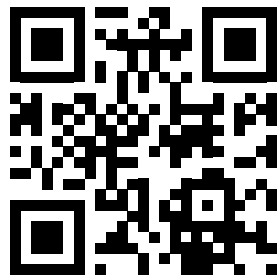
Learn more at www.LayerZero.com

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