



PowerWave Bus System

The Next Generation of Flexible Power Distribution

PowerWave Bus System

Flexible. Robust. Efficient.

Specifically designed for the mission critical power market, the PowerWave Bus System is a rugged yet flexible, easy to install, highly efficient, structured busway for the safe and reliable distribution of power. The PowerWave Bus System incorporates several patent pending design features including integrated communications capability, Camtough™ structured joint technology and a robust Toughrail Technology® support frame.

With over 35 years serving data and processing centers as well as banking and industrial markets, PDI has gained an unmatched level of expertise in developing reliable products for critical power facilities. From preliminary concept to final installation, PDI critical application solutions simplify system installation, improve flexibility and increase operational efficiencies.

Traceability

Overhead power distribution effectively maximizes the use of space and increases traceability of circuits.

Configurability

The continuous rail design allows circuits to be added and changed as needed without extensive electrical work. Splice connections are removable to support easy reconfiguration options.

Flexibility

Server loads can be plugged in almost anywhere along the raceway. Through Tap-Offs, the exact circuit breaker capacity and cable or receptacle type can be specified at any location along the rail, simply by plugging the correct Tap-Off into the busway. Tap-Off units are highly configurable to meet load demands and specific requirements including monitoring.

Disruption-Free Upgrades and Additions

The PowerWave Bus System allows for equipment upgrades and additions on live systems.

Energy Efficiency

The open channel bus design eliminates energy-wasting hot spots commonly found in electrical cable congestion points. It reduces resistance and minimizes voltage drops as well as power losses, which in turn decrease heat generation.

Structural Robustness

Designed with PDI's unique Camtough™ structured joint technology as well as the robust Toughrail Technology® support structure, the PowerWave Bus System consistently passes load capacity tests of up to 200 percent of its maximum rating.

Environmental Friendliness

The PowerWave Bus System is made of 99 percent recyclable components.

Safety

The components of the PowerWave Bus System are flame-retardant and comply with all industry standards to eliminate toxicity in case of a fire.

Integrated Communications Capabilities

Optional integration of communication enables advanced power monitoring without additional footprint.

PDI's Branch Circuit Monitoring System (BCMS) Hub can collect power data from a total of up to 240 devices with multiple monitoring display options.

Alternatively for lower density applications, the 7" PowerWave Local Touch Screen Display can collect power data from a total of 96 devices using solely the PowerWave Bus System.

Specifications	PowerWave Bus System Item Description	System Ratings					
		160	225	250	400	600	800
Ampacity System	Six specific design options with the most common ampacity.						
Protection	Finger-safe indoor rated systems.	IP2X					
Rated Voltage	Maximum operating voltage 600V	208/480V					
Rated Short Circuit Withstand Capacity	Tested and rated at 480V to 22-42 kA depending on amperage.	22 kA			35 kA ^{1,2}		42 kA
Conductor Type	All conductors and contact points are plated copper.	CU					
Frequency Rating		50/60 Hz					
Testing Criteria	ETL certified to UL rating for busway systems.	UL 857					
IEC Rated	ETL certified to IEC rating for busway systems.	60439.2					
CAN/CSA Rated	ETL certified to CAN/CSA rating for busway systems.	C22.2 No. 27					
System Weight	Straight sections only.	6.8lbs/ft. 10.1kg/m		9.6lbs/ft. 14.3kg/m		18.6lbs/ft. 27.7kg/m	19.4lbs/ft. 28.9kg/m

¹ rated at 400V
² 42 kA up to 208V

Component Library	PowerWave Bus System Item Description	System Ratings					
		160	225	250	400	600	800
Straight Lengths	All sections shipped with coupling on one end.	max. 12' / 3.6m and 20' / 6.1m			max. 12' / 3.6m		
Elbows	Elbows come standard with consistently aligned neutral phasing, cross neutral phasing is available on request.	Left Right Cross					
Tees	Tee fittings come standard with consistently aligned neutral phasing, cross neutral phasing is available on request.	Yes					No
End Feed Units	End Feed boxes are used to bring power to the bus system; variations are available.	Right Hand Left Hand Center Dual A&B				Right Hand Left Hand	
Hangers	Hangers are for universal mounting with various support hardware.	Top Rail Mount Side Rail Mount					
Tap-Off Boxes	Tap-Off units can be mounted at any position along the busrail. Tap-Off units are configurable with many variations of breakers, receptacles, and corded connections available.	Up to 12 Poles 120Amp Six-Pole Monitoring Capability					
Communications	A dedicated communication channel through BCMS within the busway enclosure can monitor each Tap-Off device.	Yes (optional)					

Monitoring	PowerWave Bus System Notations	System Capabilities		
		Local Monitor	BCMS Hub	PowerMap
End Feeds	Number of End Feeds that can be addressed.	Up to 6	Variable	Unlimited
Tap-Off Boxes	Number of Tap-Off Boxes that can be addressed.	Up to 15 per End Feed	Variable	Unlimited
Total Devices	Total number of addressable devices.	96	240	Unlimited
Reporting	Real time reporting.	No	Yes	Yes
Display Size	Diagonal measurement of display.	7" Touchscreen	10.4" Touchscreen	Based on Device

Toughrail Technology®

The Next Generation of Power Distribution

Toughrail Technology® and Construction

PowerWave Toughrail Technology® has a unique, inherently safe, yet open and accessible design that meets the IP2X - finger-safe safety standards. Tap-Off units can be located anywhere on the run, reducing cabling and improving functionality and aesthetics of the system. Oversized bus bars provide superior voltage drop characteristics. The extruded aluminum housing comes as a solid, one-piece design without welds and bolts to reduce weight, improve the ground path and enhance stability and strength while minimizing electromagnetic interferences.

Toughrail Technology® incorporates a unique section-to-section joint concept. The patented cam-action connection method assures a secure, thermally efficient maintenance-free connection. Our design minimizes resistance and voltage drops across the connection. In addition, by utilizing 20 foot bus (160–250Amp) sections versus traditional 10 foot sections, five joint connections can be eliminated for every 100 feet of run.

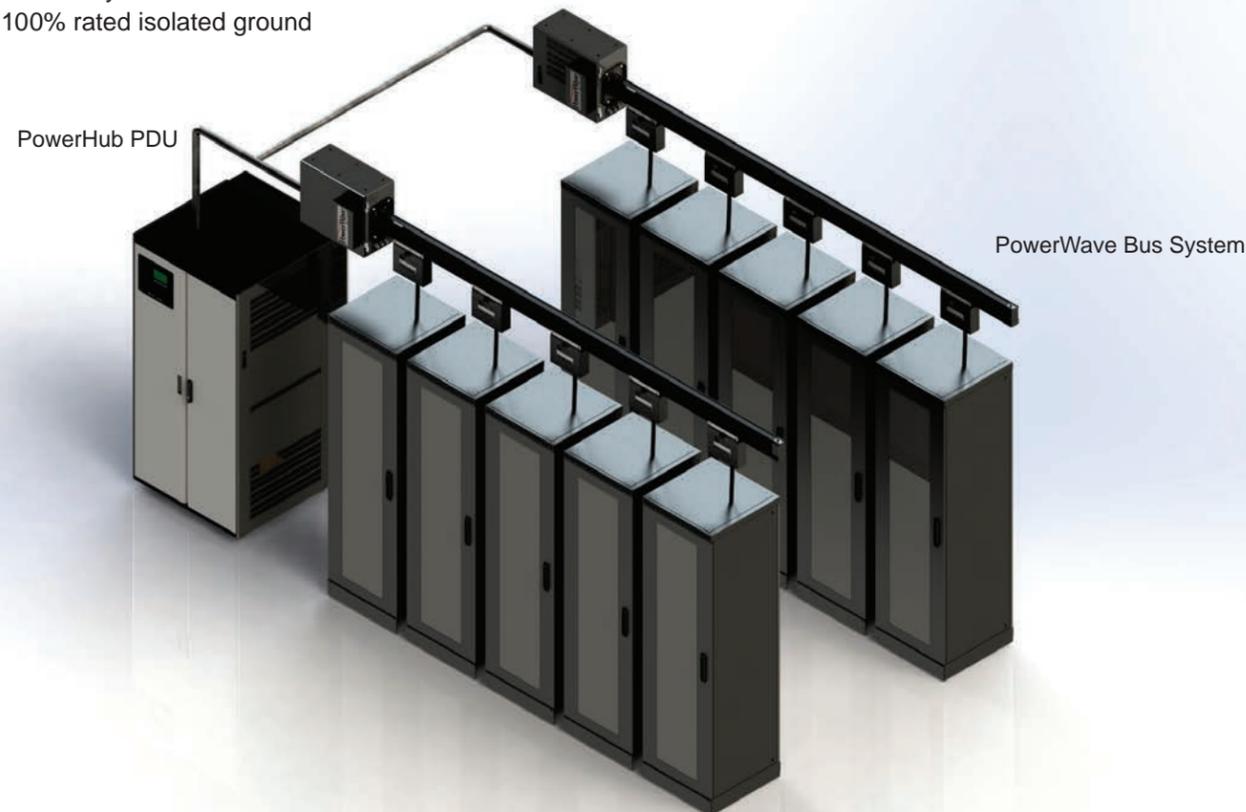
Installation Ease

System installations can be completed quickly and easily. The rugged, yet lightweight Toughrail Technology® system design allows for easy handling and installation with up to 60 percent savings in time and labor over competitive cable and conduit solutions. Visual indicators effectively support the secure installation of the busway system.

Configuration Options

The continuous plug-in style rail is rated at 160–800Amp with plated copper conductors and contacts. The patented PowerWave Toughrail Technology® system is available in the following configurations:

- three-pole and four-pole
- optional 150% fully rated neutral
- optional 100% rated isolated ground



Toughrail Technology®

Design Features

Rugged & Compact

The PowerWave Bus System with its Toughrail Technology® structured bus system is a rugged, yet compact system that eliminates any need for floor space, maximizing the server installation area. Our unique Toughrail Technology® integrates power and communication in a single run, enhancing load communications, and reducing the space required for multiple cable and conduit runs.

Construction and Finish

PowerWave Toughrail Technology® system housing is created from a single piece aluminum extrusion with a black anodized finish which enhances the dissipation of heat along the bus, effectively reducing any hot spot concentrations. Optional finish colors are available to meet specific needs.

The insulation used in the busway system is rated to 150°C and certified to UL 94VO – flammability rating. The insulation wraps around each bus bar giving perfect separation from phase-to-phase and phase-to-ground while enhancing the short circuit rating.

Plating

To improve system conductivity the PowerWave Bus System features highly-conductive, corrosion-resistant, nickel-plated copper bus bars. The resulting improvement in overall surface contact reduces resistance and decreases corrosion in high humidity environments.



Typical Busway Connector
between Rail Sections

Integral Ground Path

PowerWave Toughrail Technology® incorporates an integral ground system, a feature of its extruded, one-piece aluminum housing. By utilizing the housing design for the grounding system, we ensure a path to ground, improve the capacity, and encase the complete system.

Short Circuit Strength

The unique design for low voltage distribution from 160–800Amp of the PowerWave Toughrail Technology® system achieves an AIC rating for unprotected bus at up to 42,000 RMS symmetrical.

Voltage Drop

PowerWave Toughrail Technology® features one of the lowest voltage drop ratings in the industry. Low resistance is a key design criterion for power quality equipment in critical power and data markets.



In August 2014, PDI announces the launch of the new 800Amp open channel bus system

The new system utilizes patent pending technology in the splice allowing for fast and effective installation, providing robust and dependable reliability.

The 800Amp system introduces new technology while maintaining PDI's focus on safe products using finger-safe technology and two-step installation of Tap-Off Boxes.

800Amp Busway Enhancements:

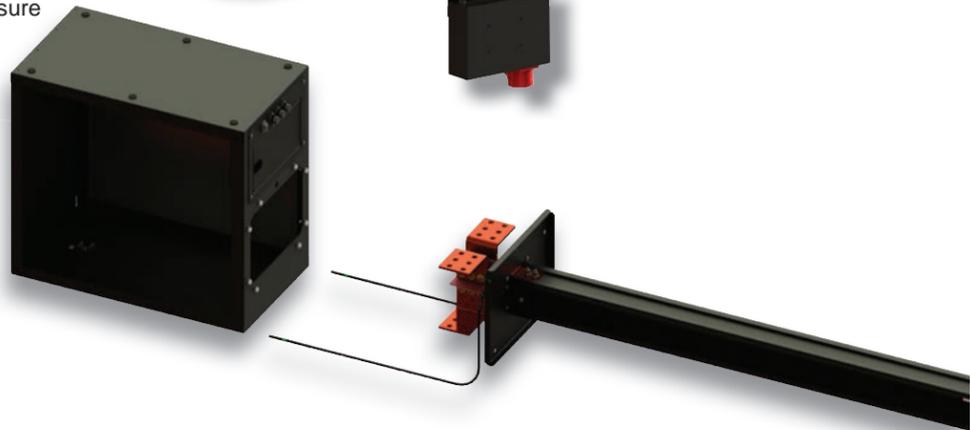
1. Ease of installation: The new splice design allows for a fast and simple installation of the bus system.
2. Compact profile allows for installation into very tight areas. Allowing you to choose to mount the system horizontally or vertically.
3. Maintained the IP2X finger-safe rating for the continuous open channel installation of Tap-Off Boxes.
4. Maintained the UL and IEC certification for live install of Tap-Off Boxes on the system.
5. Made with new high quality materials developed for the connectors industry.
 - a. Valox and Ultem
6. Industry leading keep-out area of only nine inches per splice.



800Amp PowerWave Bus System

End Feed Enclosure

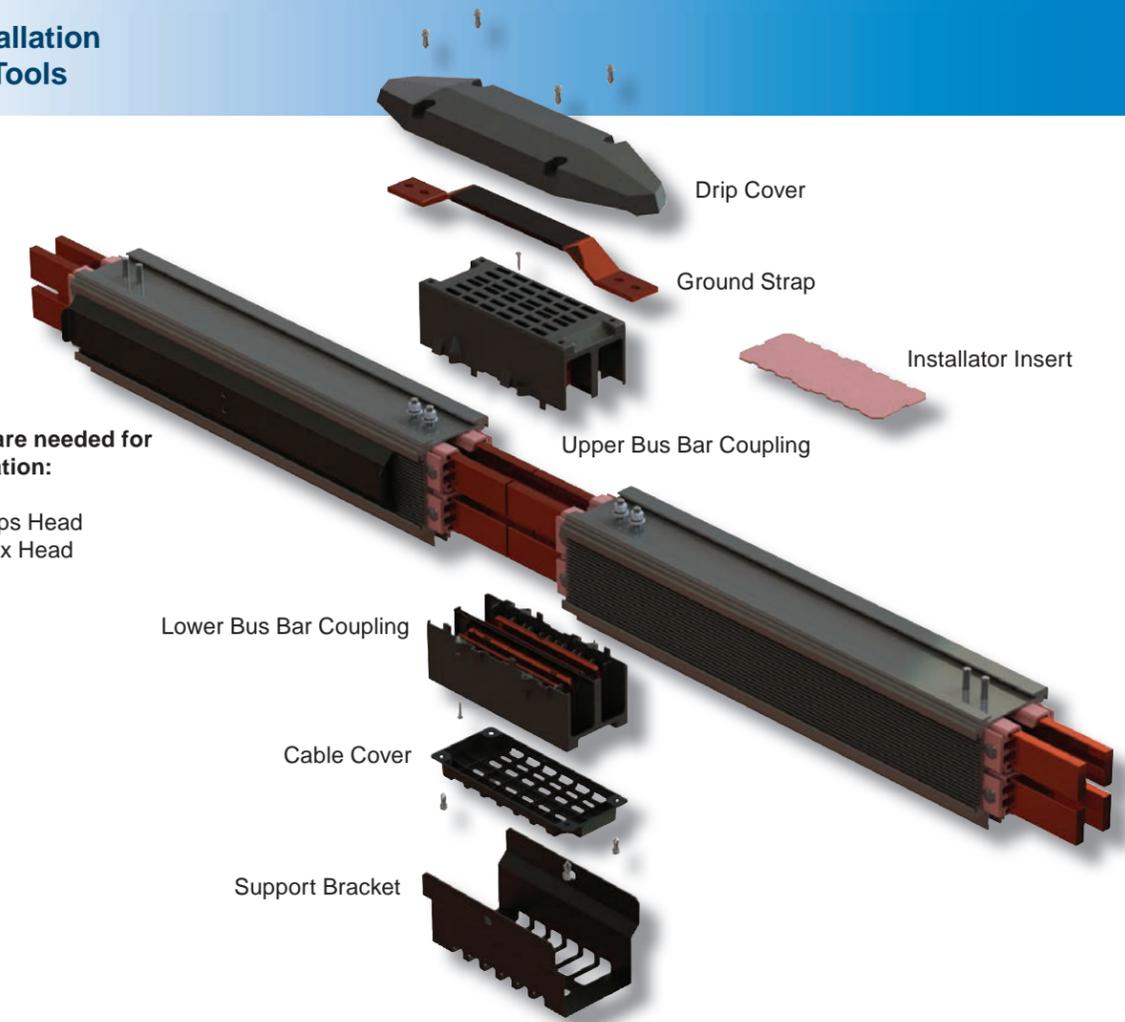
The modular End Feed design allows you to hang the rail without the inclusion of the End Feed. Once your run is positioned, simply slide the End Feed box on the rail, support with all-thread and run powering into the End Feed.



Full Busway Installation without Special Tools

Hardware needed for Installation:

#2 Philips Head
5/16 Hex Head



Improved Installation Method of 800Amp System

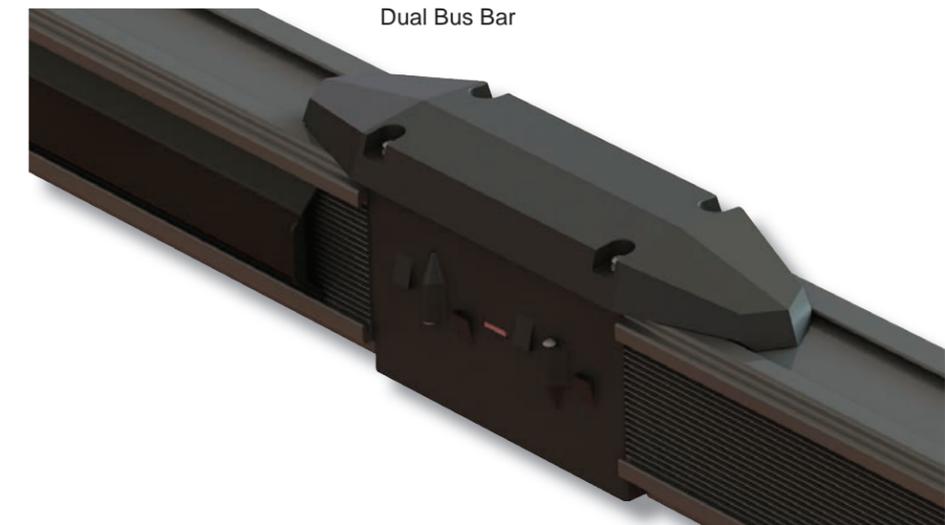
With the patent pending splice the installation becomes very simple. With the use of a #2 Philips head screwdriver and 5/16 hex head you are able to splice the two halves of the splice together, install the grounding bar, and secure the covers. The new installation procedure allows the installing contractor to reduce the installation time of the busway by up to 40%.

Our specially designed hanger allows you to choose the orientation of the busway while using the same hanger. (i.e. No special parts)

Integrated Power Monitoring Option

The 800Amp solution is built to allow the customer to have integrated power monitoring. The monitoring system allows for fast installation and setup of Tap-Off Boxes while being able to also utilize the PDI PowerHub or Local Display options.

Dual Bus Bar



About Power Distribution, Inc. (PDI)

Power Distribution, Inc. (PDI) designs, manufactures, and services mission critical power distribution, static switching, and power monitoring equipment for corporate data centers, alternative energy, industrial and commercial customers around the world. For over 35 years, PDI has served the data center and alternative energy markets providing flexible solutions with the widest range of products in the industry.

About Smiths Power

Smiths Power is a leading supplier of power distribution, conditioning, protection and monitoring solutions for data centers, wireless communications and other critical or high-value electrical systems.

As a family of brands, PDI, Onyx, PolyPhaser, Transtector, LEA and RO Associates unite under one umbrella to Transform, Distribute, Monitor and Protect™ power in global networks and systems. Our companies provide expertise in consulting, design and manufacturing of power transformers and distribution systems, static switching, power monitoring, RF, AC, DC, data signal and EMP protectors as well as power quality engineering services.

Alongside Smiths Connectors and Smiths Microwave, Smiths Power is part of the Smiths Interconnect division of Smiths Group (www.smiths.com), a global leader in applying advanced technologies for markets in threat and contraband detection, energy, medical devices, communications and engineered components. Smiths Group employs around 23,000 people in more than 50 countries.



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