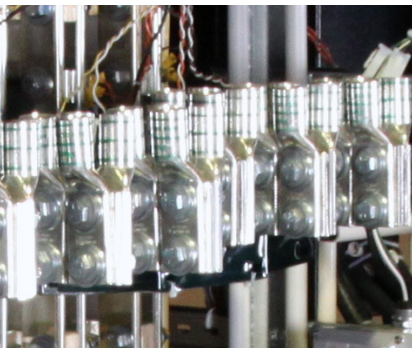
PDI



WaveStar® TFA Static Transfer Switch

True Front Access Enclosure

Seamless Power Transfers for Critical Loads

PDI WaveStar® TFA Static Transfer Switch

Over 20 years of experience has allowed PDI to become the preferred supplier of static transfer switches to mission critical industries. The PDI static transfer switch supplies critical loads with a choice between two available sources of electrical power. By continually monitoring power quality, the WaveStar® TFA switch automatically transfers to an alternate source within a quarter cycle and without interruption of power to even your most sensitive critical loads.

WaveStar® TFA STS provides the highest reliability, availability and performance power s

- *COMPARTMENTALIZED TRUE FRONT ACCESS ENCLOSURE* - Power semiconductors, molded case switches, controls, fans and operator interfaces are compartmentalized into separate areas of the true front access enclosure. This allows installation, maintenance, service and IR scanning to be completed from the front of the enclosure, minimizing square footage requirements, decreasing contractor installation time and increasing worker safety during maintenence.

- *LINE-AND-MATCH WITH OUR POWERPAK 2 AND POWERHUB 2 POWER DISTRIBUTION UNITS (PDUS)* - a universal and integrated front access cable path allows independent customization of both the PDU and STS to provide a system of power switching and distribution unique to each client or facility.

- *TRIPLE REDUNDANCY* - true system redundancy provides the ultimate in power system reliability.

- *DUAL REDUNDANT OPERATOR INTERFACES* - in the event of a touchscreen display failure the WaveStar® STS can be operated via the Redundant Operator Interface (ROI). The ROI enables the operator to select Mode of Operation and Source (1 or 2) enabling continuous operation, maximize uptime and when combined with triple redundancy provides and industry leading calculated 2 million hour Mean Time Between Failure (MTBF).

- *RIGOROUS FIVE-STEP QUALITY PROCESS* - (1) vendor quality partnership using PDI designed test equipment and procedures, (2) functional component testing, (3) component level tests in simulated STS environment, (4) module level test, and (5) verification of final product system performance.

- *VOLT SECOND SYNCHRONIZATION (VSS) ALGORITHM* - the WaveStar® VSS transfer algorithm switches power sources quickly within CBEMA limits without connecting the two sources, all while minimizing voltage disruptions and preserving transformer flux balance. This is achieved by rapidly firing the power semiconductors to establish a balance point as quickly as possible by analyzing the voltage disruption and volt-second balance. The result is an automatic clean transfer of power 1/2 to ≤ 3/4 cycle with in-rush current typically ≤ 1X unit rating regardless of make up and size of the load. Manual transfers are ≤ 1/8 cycle for in-phase conditions.

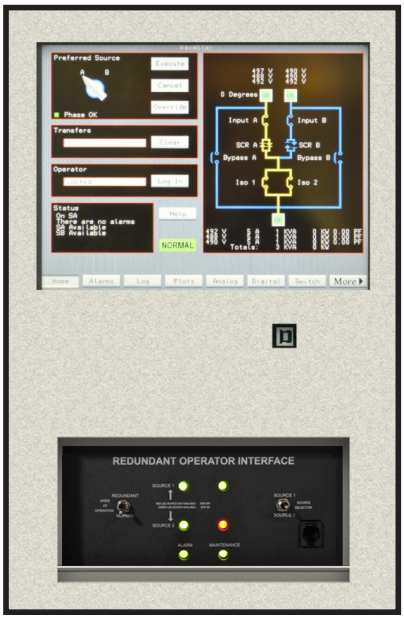
- *POWER OR GATE (POG) ALGORITHM* - the WaveStar® POG transfer algorithm transfers the load to the alternate source as quickly as possible with automatic transfer times ≤ 1/4 cycle (including sense time) and ≤ 1/8 cycle for normal in-phase conditions.

- *COMMUNICATIONS PACKAGE* - the WaveStar® communication package enhances the overall reliability and availability of power to your facility by:

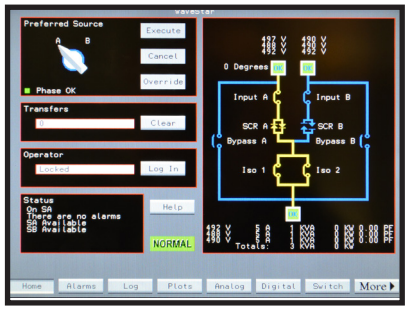
  - Providing instantaneous access to redundant sources of power
  - Enabling on-line maintenance of upstream equipment
  - Showing real time wave form captures on the color touch screen
  - Gathering power data from downstream BCMS devices (PDU, RPP).

TRIPLE redundancy = ultimate system RELIABILITY

CURRENT RATINGS	width	depth	height
250	50"	36"	84"
400	50”	36”	84”
600	50”	36”	84”
800	60"	36"	84"
1000	60”	36”	84”
1200	Coming 2018		
1600	Coming 2018		
2000	Coming 2018		



WaveStar® Display and Redundant Operator Interface



LCD Color Touch Screen

- Dynamic one-line mimic
- Operator controls
- Login access for control
- Alarm and event logs
- Source identification

Wave Form and Event Capture Screen

- 25 total events kept in memory
- Downloadable
- 18 second capture after power loss

PDI WaveStar® TFA Static Transfer Switch

Product Profile

Redundancy
- Fail safe dual redundant display
- Triple redundant logic
- Triple redundant power supplies
- Dual redundant gate drivers for SCRs
  - Two gate drivers for each SCR
- Two-output switches available

Logic
- Power or Gate (POG) Algorithm
- Volt Second Synchronization (VSS) Algorithm limits in-rush for 600, 575, 480, 450, 415, 400, 380 & 208 volt systems during transfers.
- VSS Soft Start Up, initial start-up, restart or transfer limits to ≤ 2 times in-rush up to 180 degrees out of phase, typically <1 times in-rush.

Security
- Layered security through log on access
- User log-on ID and PIN number required for STS operation
- All log-ins are time and date stamped for future reference

Installation and Maintenance
- True Front Access Enclosure for installation, maintenance, service and IR scanning.
- Separate compartments for logic module, power semiconductors, molded case switches and fans for safer maintenance and easy access for IR scanning.
- Optional IR Scanning Windows enable operator to scan all connections with minimal Personal Protective Equipment (PPE).
- "Hot Swap" capability for Printed Circuit Boards (PCBs)
  - Bypass allows for replacement of PCBs while STS is powered and connected to the load.
- "Hot Swap" capability for touch screen display.
  - Engaging the Redundant Operator Interface (ROI) allows the touch screen display to be replaced without interrupting power.

Monitoring
- Fail Safe Dual Redundant Operator Interfaces
  - Primary interface - touch screen display
  - Secondary interface - Redundant Operator Interface (ROI)
- Status, event and alarm logs captured and stored at the STS and viewable locally on the touch screen display and via web browser (STS may NOT be operated via the web browser).
- Events will continue to record up to 10 seconds after loss of power.
- Event/alarm memory is 2MB
- "Real Time" capture of wave forms
- Branch Circuit Monitoring System (BCMS) available
- Graphic depiction of load trends
- Graphic depiction of voltage and current harmonics
- Voice unit audible assistance for alarms and bypass operations.

Graphical User Interface (GUI)
- 10.4" LCD color touch screen
- 640 X 480 resolution
- 262K colors

Communications Protocol
- Modbus TCP/IP
- Modbus RTU through RS 422/485 port
- SNMP
- (TCP/IP) read-only web browser
- Email alerts
- NTP time setting
- Alarm log download via USB

PDI Service and Support

After your equipment has been installed, call on the PDI service team for 24/7 support. With 4 decades of mission critical power experience and seasoned factory-trained service staff, PDI Global Services can maximize the benefit of your equipment investment.

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 four decades, PDI has served the data center and alternative energy markets providing flexible solutions with the widest range of products in the industry.

PDI

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