

## POWER SYSTEMS

*Uninterruptible  
Power  
for the  
Network's Edge*



Wi-Fi

WiBro

WiMax

DSL

BWA

VoIP

## POWERING THE NETWORK'S EDGE

New technologies are enabling quality voice, multimedia and other delay-sensitive traffic across Internet Protocol (IP) networks at the Network's Edge. However, Quality of Service (QoS) is essential before full-scale deployment of broadband services can occur. QoS is not possible without an uninterruptible power source (UPS), but the Network Edge lacks the sheltered and supervised infrastructure of the Network's core, as found in the Central Office, where large 48V battery plants already exist.

The typical setting for Network Edge equipment is a tower, rooftop, utility pole, or building wall exposed to wind, rain, sleet rain, ice and snow as well as...



- **Inaccessible locations with wide temperature extremes**
- **Poorly regulated AC power sources with large transient fluctuations**
- **High humidity, corrosive and salt atmospheres**
- **Sand and dust**
- **Vermin and vandals**
- **Sun loading**



TDI's new Network's Edge Power Systems are designed with Environmentally Sealed Power Modules and Electronics for ease of installation on a pad, tower, pole, wall or rooftop. They reliably operate in the harshest environments, meeting the challenges with reliable, economical, and versatile UPS Power Systems.

## KEY FEATURES

### **Versatile Application:**

Full scalability for charging and back up battery requirements

### **Simplified Maintenance on Site**

### **Environmentally Sealed Power Modules and Electronics**

### **Easy Deployment:**

Lightweight and modular assembly featuring:

- AC & DC Distribution
- Control & Monitoring
- AC and DC Surge Protection
- Thermal Battery Management for reliable performance & extended life
- Charge Control Management for extended life
- Mounting Options
- Low initial Cost
- Self-contained and Optimized for your application
- Robust design and careful battery management for long life and minimal maintenance costs



***TDI's Network's Edge  
Power System***

Front View

## SYSTEM ELEMENTS

TDI Network's Edge Power Systems are comprised of three major elements which are configurable to the application to solve various power and holdup requirements.

### Power & Signal Interface Module (PSI)

The Power & Signal Interface Module (PSI) is an IP65 rated enclosure that is positioned at the top of the Network's Edge Power System. It serves as the central termination point for all power and signal nodes in the system. All customer cabling will enter/exit the PSI via weathertite glands on the left side of the enclosure. It's easily accessible through the hinged top cover and houses all of the systems' control and interface elements:

- AC & DC Power terminations and fuses
- AC & DC Power Line Surge Suppression (replaceable modules)
- Control and Alarm Terminations
- Master Controller PCB Assembly (replaceable module)
- Battery Low Voltage Disconnect override switch (for service)
- Rectifier Module Power & Signal Terminations

### Base Battery Cube

The Base Battery Cube (BBC) is an IP55 rated enclosure that attaches to the bottom of the PSI, and houses the systems first string of batteries. The Rectifier Module mounts to the right sidewall of the BBC, and access to the batteries is through a front swing-out door. The BBC contains the following key system elements:

- One (1) string of 48V 17 Ahr Batteries
- Dedicated Low Voltage Disconnect Circuit for Batteries
- Dedicated Battery Heater (optional Cold Weather Package)
- Battery Current Sense Circuitry
- Battery Cavity Cooling Fan for System (optional Warm Weather Package)
- Battery Hold Down Hardware
- Battery Vent
- Battery Cabling

### Base Expansion Cube

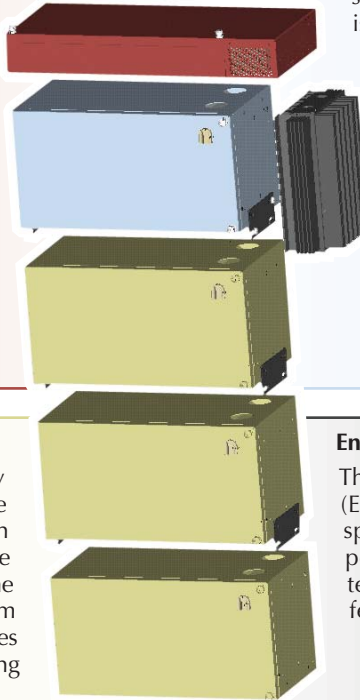
The Battery Expansion Cube (BEC) is essentially a duplicate of the Base Battery Cube with the exception of the battery cooling fan. Expansion cubes come complete with all of the hardware necessary to attach the BEC to the bottom of the lowest battery cube in the system. The system can accommodate up to four (4) battery cubes for a total of 68 Ahrs of battery backup. Mounting and wiring hardware includes:

- Two (2) "keyed" side straps for ease of assembly
- Two (2) wire-way and ventilation tubes that get fitted between adjacent battery cubes
- All interface wiring harnesses (plug and play)

### Environmentally Sealed Power Module

The Environmentally Sealed Power Module (ESPM) is a -54V telecom rectifier designed specifically for harsh outdoor applications. It possesses all of the typical features of a telecom rectifier, along with some unique features including:

- Wide Range AC Input (85-275 VDC)
- Adjustable DC Output (-43.5 to -57.6 VDC)
- 91% Efficiency (typical)
- IP67 Rated (immersion proof to 1M)
- Natural Convection Cooling



## CONTROL, MONITORING AND ALARM FEATURES

System control and monitoring is provided by the system's Controller Board Assembly (CBA). The CBA plugs into the main power board within the protected confines of the PSI module. The CBA comes in one of two configurations, each possessing the following key functionality::

### Discrete Controller (standard)

Control Functions: Battery Temperature Compensation, Charge Current Limiting, Battery Temperature Maintenance  
Variables Monitored: Ambient Temp, Battery Terminal Temp, Battery Current (per string), System DC Bus Voltages, Rectifier Fault signals

Alarm: System Fail (Form C contacts)






### Digital Control (optional)

Control Functions: Battery Temperature Compensation, Charge Current Limiting, Battery Temperature Maintenance, Battery Life Prediction and Reporting

Variables Monitored: Ambient Temp, Battery Terminal Temp, Battery Current (per string), System DC Bus Voltage, Rectifier Fault signals, Charge & Discharge Cycles

Alarms: AC Fail, System Fail (Form C contacts), Battery End of Life Warning

## SYSTEM SPECIFICATIONS

	Base System	2 Battery System	3 Battery System	4 Battery System
<b>Color Options</b> 				
<b>Outline Dimensions in(mm)</b>	23.64" x 14.27" x 14.08" (600.45 x 362.45 x 357.63)	23.64" x 14.27" x 22.57" (600.45 x 362.45 x 573.27)	23.64" x 14.27" x 32.05" (600.45 x 362.45 x 814.07)	23.64" x 14.27" x 41.53" (600.45 x 362.45 x 1054.86)
<b>Mass lbs (kG)</b>	91.5 lbs (41.5 kg)	163.5 lbs (74.1 kg)	235.5 lbs (106.82 kg)	307.5 lbs (139.48 kg)
<b>AC Mains Input (range)</b>	90-265VAC, Single phase, 47 to 63 Hz			
<b>Max Input Current</b>	15A maximum			
<b>Input Harmonics</b>	Complies with EN61000-3-2			
<b>Input Surge &amp; Fast Transients</b>	Complies with EN61000-4-4, Level 3 and EN61000-4-5 to 8KV with 2 ohm source impedance			
<b>Conducted and Radiated EMI</b>	Complies with FCC Part 15, Sub Part J, Class A and EN55022 Class A			
<b>DC Output (AC Mains Operation)</b>	-52.5 to -57.5 VDC Temperature dependent due to battery temp compensation			
<b>DC Output (Battery Operation)</b>	-43.5 to -54 VDC, LVD setting determines lowest voltage			
<b>DC Output Power</b>	900W for Tamb>15 C, 1080W for Tamb<15C Due to battery heaters			
<b>DC Output Surge Susceptibility</b>	DC Outputs & Signals comply with EN61000-4-5 to 1KV with 12 ohm source impedance			
<b>Line regulation</b>	+/- 0.25%			
<b>Load Regulation</b>	+/- 2% when running on AC Mains			
<b>Output Overloads</b>	Rectifier is short circuit protected, batteries are protected by fuse			
<b>Over Temperature Protection</b>	Rectifier has automatic shut down			
<b>Operating Temperature</b>	-35 to 50 degrees C			
<b>Hold-up Time / Battery Capacity</b>	17Ahrs	34Ahrs	51Ahrs	68Ahrs
<b>Load = 150W</b>	220 minutes	450 minutes	670 minutes	900 minutes
<b>Load = 300W</b>	80 minutes	200 minutes	340 minutes	450 minutes
<b>Load = 600W</b>	35 minutes	80 minutes	150 minutes	225 minutes
<b>Load = 900W</b>	20 minutes	50 minutes	80 minutes	110 minutes
<b>Note:</b>	Holdup Times are factored with 20% margin over new battery capacity			

<b>Weather Resistance</b>	Withstands Water & Dust Intrusion & Wind Driven Rain as prescribed in GR 487, Section 3
<b>High Temperature Resistance</b>	Withstands Thermal Shock & High Temperature Exposure as prescribed in GR 487, Section 3
<b>Low Temperature Resistance</b>	Withstands Thermal Shock per GR 487, Section 3, and Icing per UL50
<b>Acoustic Noise</b>	< 30dBA
<b>Safety Approvals</b>	UL50, UL60950, CE Mark pending

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