

ATECNUM®

Industry Proven, Industry Accepted Instrumentation Systems for Overhead Power Transmission Line Monitoring and Control



PowerDonut® Key Features

- Load Range 0—3000 amps
- Conductor temperature range -40°C to + 250°C
- Inclination -11° to +11° tilt
- 7200 samples/sec Waveform Capture (I and V)
- Dual wireless communication—2.4 GHz and Cat-M1 / NB-IoT
- Voltages up to 765 kV



Weather Stations

- Ultrasonic wind sensor with no moving parts
- Ambient temperature
- Solar radiation intensity
- XBEE wireless radio, and cellular mobile connection options
- SDI protocols
- Humidity and rainfall rate available

Ground Stations and RTUs

- Weatherproof NEMA enclosures
- Real Time Data Acquisition and Control Software including the most utilized SCADA/EMS protocols via fiber/ wireless/cellular
- Universal power input (DC to 220 VAC 50 or 60 Hz)
- Internal memory for historical data logging



Applications

- Conductor Tap Monitor
- Conductor Temperature and Sag Monitor
- Dynamic Line Ratings
- Special Protection Systems for Alternate Energy Production

ATECNUM®

1734 Corporate Drive
Boynton Beach, Florida 33426 U.S.A.
Tel: +1 (561) 910-2993
info@atecnum.com
www.atecnum.com

PowerDonut®



Physical	4th Generation “PD4”
Diameter	12.6 inches (32.0 cm).
Width	5.5 inches (14.0 cm).
Weight	19.0 pounds (8.6 kg).
Operating temperature	Range: -40°F to +140°F, -40°C to +60°C (ambient).
Environmental	Fully weatherproof. Corona-free operation through 765 kV rated voltage.
Installation	Energized (hot stick) or de-energized. Suitable for bundled conductor applications.
Power Supply	Powered from the conductor magnetic field and a rechargeable internal lithium-ion battery pack. No external power supply is required. Nominal current required to operate is 50 A.
Battery operation	Runs on battery for 4 hours (programmable) when not operated by line current. Will initiate an orderly shutdown on low battery. Battery charges when the line current is above 60 A. Typical charge time is 10 hours.
Measurements	Conductor current (RMS), Phase-to-ground voltage (RMS), conductor temperature, conductor inclination angle.
Conductor current	+/- 0.5% of reading. One reading per second. Measures 0 to 3000 A.
Conductor voltage	Up to 765 kV rated voltage +/- 2.5%.
Conductor temperature	+/- 1°C accuracy. 0.25°C resolution. One reading per minute. Standard temperature range: -40°C to +170°C. Extended range: -40°C to +250°C.
Inclination angle	+/- 0.05 degrees accuracy. 0.02 degrees resolution. One reading per minute. -11 to +11 tilt measurement range (able to be offset).
Communications	Built-in CAT-M1/NB-IoT cellular telephone and 2.4 GHz radio are installed, standard.
Cellular telephone	1.4 MHz (CAT-M1), 200 kHz (NB-IoT).
2.4 GHz radio	10 to 100 mW (configurable) XBEE radio.
Diagnostic software	Windows-based software providing comprehensive diagnostics and ability to configure all PD communications inputs.
PowerDonut® Software	PDS20. Windows-based data management system for handling data and managing communications.
Dynamic Line Rating	Software module for computing real-time ampacity. Includes IEEE Standard 738 weather model and proprietary conductor temperature model.
Line Tension and Sag	Proven Software module for computing line tension, Line Sag and Conductor length based on proprietary Catenary Equation solution.

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