

Military Grade UAV Tether System

TPS1000-3KW

Powered by **Polarity**®

A Global Leader in Power Solutions



AS 9100:2009 REV C

Specifications:

- 4KW HV Power Supply, adj. 1kV to 5kV
- 3KW Payload pwr conv., 48VDC and 24VDC
- High voltage tether : up to 1500 feet
- Tether winch with tension control
- 3KW Payload pwr conv: 4lbs
- 3KW Payload pwr conv: 6.5" x 6.5" x 6.5"
- 4KW HV Power Supply: 48lbs
- 4KW HV Power Supply: size: 8.25" x 9" x 22"

UAVs

- Single Rotor Helicopters
- Hexa/OctoCopters



Tether Winch System

4kW HV PS

3kW Single Rotor PS

3kW Multi-Rotor PS

Military Grade Electrical Tether System

Ideally suited for demanding performance in tethered systems that require several kilowatts of power delivered over several 100 feet of electrical cable, 1000 feet nominal. Built to withstand harsh environments for shipboard, ground mobile, and fixed ground applications.

System Components

- 2KW to 5KW peak UPCONV
- 2kW to 4kW peak DNCONV
- 1500ft tether with optic comm.
- Tether Management System
- Built-in UAV protection

Built-in protection

- 3us electronic crowbar
- Fast peak/average GND faults
- HV UV fault with auto-battery
- Panel interlocks
- Onboard battery backup
- Static discharge suppression

Additional Options

- Ethernet, RS485 to optic fiber
- Custom mounting
- Air cooled
- Smaller Winch System
- 5KVA Generator

Guaranteed Reliability

- Proven reliability to operate in harsh environments - high ambient temps, high humidity, and sand/dust.
- Designed with power components that have accumulated more than 1 million hours of operation.
- High voltage potting was developed for high voltage equipment that operates above 50K feet.

Polarity's Tether System is specifically designed to meet mission critical ground to air applications that can exceed 1500 feet. Polarity offers custom models suited for all ground mobile and stationary applications. Outstanding thermal design ensures reliable operation to ambient temperatures of +60deg C. The Tether System offers a design with industry leading reliability and its design ensures rugged performance that is unmatched. High efficiency designs meet the demands of today's complex systems and offer the ability to effectively power manage increasingly challenging requirements for electrical tether systems.

Industry Leading Performance — Affordable — Proven Reliability

Performance Specifications :

Tether System		Environmental			
Output Power:	3000W load average @ 1000ft	Operating Temperature:	-10deg C to +50deg C, NOTE: depends on available airflow and enclosure geometry.		
Output voltage:	24V and 48V	Non-Operating:	-40 deg C to +850deg C,		
Electronic crowbar:	Discharges output energy in 3us	Relative Humidity:	95%		
Winch Power:	600W maximum	Altitude:	Operating: 10,000 ft		
Options:	Battery back up / management	Non-Operating:	70,000 ft		
Line Input:	220VAC, 50-60Hz, 1PH	Shock:	20 g peak , 11 msec , $\frac{1}{2}$ sine		
Power Consumption:	5KVA (max)	Vibration:	2.1 grms , 5Hz to 500Hz		
Power Factor:	0.98 (min)	Thermal:	Air cooled, rotor airflow		
Built-in Protection		Remote Interface			
Built-in electronic crowbar, <3us response time		Ethernet to optic RS-485 to optic			
Ground current average fault		Optional Telemetry: Altitude, GPS Location, Voltage/Current, Temperature, Wind speed, Ka band Sat comm., Streaming video			
Ground current peak fault					
OC, OV, Output Arc, UV					
Down converter OC/OV					
Grounding Rod Connection					

Pictured is a 1000ft Winch System

System Connection with 5KVA Generator



Note: Smaller and lighter weight tether systems are available