

PORTABLE TETHEREDSONDE WINCH MODEL PTW-9500

BULLETIN PTW-9500

$$p = \frac{\rho RT}{m}$$

$$S(\lambda) = S_0(\lambda) e^{-m \cdot \delta(\lambda)}$$

$$B(T) = bT^4$$

General Description

The Model PTW-9500 Portable Tetheredsonde Winch is designed to control tethered balloon-borne meteorological sensors. Remote control of its bi-directional variable speed motor provides precise control over the position of a tethered balloon radiosonde (tetheredsonde).

Principle of Operation

The PTW-9500 is a portable remote controlled electronic cable winch specifically optimized for the precise control of vertically-lifted balloon payloads such as tetheredsondes. As the system operates, motor speed is controlled by the user. A handheld RF-linked remote control to govern safe cable payout rates under various wind conditions.

Tetheredsondes replace the need for meteorological towers and in temporary or emergency applications they provide instant vertical wind profiles. Depending on wind conditions and balloon size, a tetheredsonde can be raised & lowered throughout the boundary layer up to altitudes approaching 6500 feet (≈ 2000 meters).

The system consists of a sturdy reel mounted in an aluminum chassis, driven by a powerful electronic variable speed DC gear motor drive. Line payout is controlled by a precision anti-tangle mechanism similar to those used on large fishing reels. A durable waterproof high impact plastic flight case protects the system and permits rapid setup. Line speed and direction are controlled via a wireless handheld wireless remote control that can control up to two PTW-9500 winches simultaneously.

Features

- Portable system, simple to use and setup
- Smooth precision DC drive motor with digital motion control
- Operates from either line AC or external 12 Vdc (via automotive cigarette lighter adapter)
- Wireless remote control for safe "hands-off" operation
- One or two winches can be remote-controlled from up to several hundred feet away
- Digital counter provides indication of payout
- Rugged, simple design stands up to field use



PTW-9500 Portable Tetheredsonde Winch

Applications

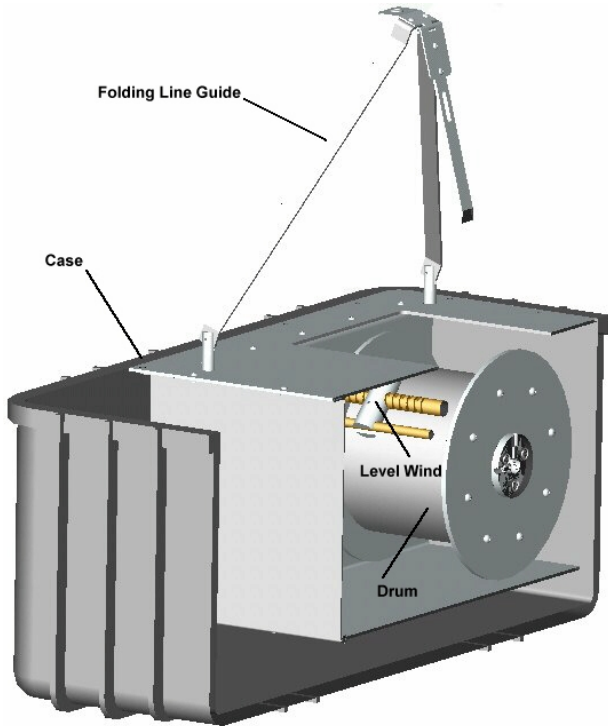
- Homeland defense and emergency response teams that require "go anywhere" local wind speed and direction for nuclear biological or chemical (NBC) dispersion monitoring
- Military and weather/met service teams
- Boundary layer measurements for air pollution and plume studies, EPA compliance and site certifications
- Radiosonde, radar and sodar intercomparisons
- Environmental research studies



Integral flight case, RF remote and DC supply



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Side view cross section showing main components of winch inside the case

Specifications

Power Requirements	110/220 Vac 50/60 Hz; or automotive-type 12Vdc cigarette lighter power point, 100 watts max
Drive Train	0.1 HP dc motor
Operating Temperature	±50°C storage & operating, 0-85% RH non-condensing (door open) 0-100% (door closed). Not intended for operation in rain with door open.
Dimensions	27"W x 18"D x 14" H
Weight	≈57 lbs. (26 kg) including remote (total weight depends on line length loaded)
Speed	0-1 m/s (variable)
Maximum Load	100 lbs. (45 kg) @ full extension
Drum Size	6.5" dia (16.5 cm)
Maximum Line Length	6000 ft. (≈1800m) for fine line Max line length is limited by reel clearance to chassis



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