



Triton® Wind Profiler



Features

- High height data — to 200 meters
- No permitting required
- Extremely low power consumption (7 watts)
- Data access and monitoring via secure web portal
- Ease of deployment — installed and collecting data within 2 hours
- > 99.9 % operational uptime based on more than 800 commercial systems deployed worldwide since April 2008

Triton® Wind Profiler is a durable, robust, and independent sonic detection and ranging (SODAR) device used for profiling wind regimes at a given location.

A Resource Assessment System For Today's Wind Turbines

Vaisala Triton Wind Profiler is an advanced SODAR that provides wind data well above the rotor tip-height of today's large wind turbines. Triton captures extensive data on anomalous wind events such as speed and direction shear and turbulence that directly affect wind turbines' power output — and that could affect a wind farm's performance.

Low Power Consumption

Triton requires only 7 W of power for continuous operation. Technology innovations like low-power amplifier chips and the Blackfin ARM enable Triton to be powered by two solar panels and to run continuously without being attended.

High Height Data

Triton captures wind data at heights up to 200 meters, reducing uncertainty inherent in the use of extrapolated data from meteorological towers. At

120 meters, high quality filtered data captured by Triton normally exceeds 90 % (averaged over a 12-month period). Triton's performance has been validated by studies correlating its measurements with anemometers at a number of sites.

Monitoring and Data Access Via Secure Web Portal

Download and analyze your wind data at any time, from any location via the Internet. Access ten-minute averages in real-time over a secure web server, and easily read and understand the data. In addition, our support team can monitor your Triton's operations daily.

Easy to Deploy and Relocate

The low-profile Triton can be deployed and transmitting data within a few hours. With no moving parts, solid-state electronics, and a tough, lightweight low-density polyethylene (LDPE) enclosure, Triton is well equipped for redeployments in the toughest environments, in all climates.

Use Tritons for Every Stage of Your Wind Project:

- Greenfield prospecting
- Micrositing and turbine suitability
- Wind shear validation
- Hub height wind speed validation
- Ramp event forecasting
- Reducing spatial uncertainty
- Power curve testing and nacelle anemometer correlation

Technical Data

Data Capture

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|--|---|
| Maximum height | 200 m (656 ft) |
| Wind data capture heights | 40, 50, 60, 80, 100, 120, 140, 160, 180, and 200 m (131, 164, 196, 262, 328, 393, 459, 524, 590, and 656 ft) |
| Wind speed | 0 ... 40 m/s (0 ... 90 mph) |
| SD memory card socket | 2 GB SD card records a minimum of 2 years of 10 min data |
| Data upload rate | Every 10 minutes, via satellite/cell link ¹⁾ Automatic data buffering and backfilling protocol. |
| Data recovery rate (unfiltered) | > 98 % (at all heights) |
| Filtered data correlation | Within 2 % of anemometers |
| Nominal Filtered Data Recovery Rate (With > 90 % Quality Factor) ²⁾ | |
| At 100 m (328 ft) | Approx. 90 ... 95 % or higher |
| At 120 m (393 ft) | Approx. 88 ... 92 % or higher |
| At 140 m (459 ft) | Approx. 85 ... 90 % or higher |

¹⁾ Check with Vaisala for availability of satellite and cell modems for each region

²⁾ Filtered data recovery rate represents the percentage of Triton data with a Quality Factor > 90 % averaged over a 12-month period to account for seasonal and diurnal effects. Application of a minimum QF of 90 % removes low quality data associated with atmospheric stability, atmospheric absorption, and precipitation events. The Triton's Filtered Data Recovery Rate is equivalent to "directionally filtered data" from met tower-mounted anemometers.

Power Supply

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| Average power consumption | 7 W |
| Solar panels | 2 panels, each rated at 85 W |
| Internal batteries | Leak-proof AGM marine batteries, rated 12 V, 92 Ah |
| Battery capacity | Internal shipping-safe mounting system holds up to 4 batteries for 20 days of operation without charging. (See note under Snow Removal Package/Battery Capacity) |

Installation

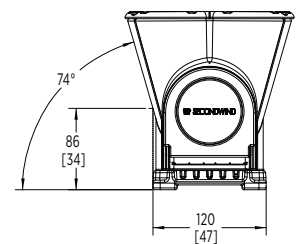
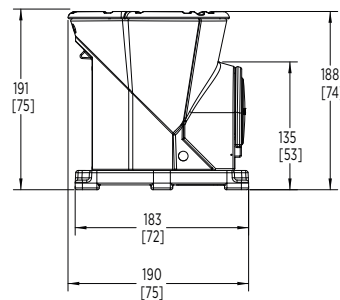
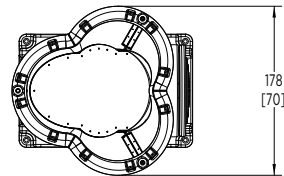
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|------------------|--|
| Footprint | 2 × 3 m (6 ft × 9 ft) with solar panels fitted |
| Orientation | Dual-axis accelerometer for automatic correction for out-of-level Site location determined by GPS |
| Leveling of base | Within 3° of level in x and y axis |

Operation

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| Ambient temperature | -40 ... +65 °C (-40° ... +150 °F) |
| Frequency of sound beams | 4500 Hz (nominal) with automatic temperature correction |
| Number of sound beams | 3 |
| Data sampling rate | Approx. 100 'chirps' per sound beam per 10-minute period |
| Duration of sound 'chirp' | 60 ... 100 ms |
| Sound level at ear level (intermittent sound source) | 0 m: 87 dBa 50 m (164 ft): 63 dBa |

Transportation

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| Dimensions | 2 × 2 × 2 m (6 ft × 6 ft × 6 ft) 1.2 m (3 ft 11 in) wide base fits in pick-up truck bed or trailer |
| Weight | 350 ... 450 kg (750 ... 1000 lb) depending on configuration |
| Integrated shipping | Triton and all accessories ship as one unit |



Dimensions in cm (inches), rounded to the nearest unit. Solar panels and mounting hardware not shown.

Optional Snow Removal Package

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| Energy source | LPG (propane) |
| Storage capacity (to be provided by the customer) | Triton enclosure has nesting locations for (1) 18 kg (40 lb) and (1) 14 kg (30 lb) LPG bottles with a combined capacity of 32 kg (70 lb) |
| Run time | Up to 200 h of snow melting with 32 kg (70 lb) internal propane supply |
| Heater control | Intelligent system with satellite control capacity |
| Battery capacity | For heater-equipped Tritons, frequent heater activations will reduce the time of battery operation without a charging event |

Configurations

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| Standard Triton configuration | 2 batteries 2 solar panels Globalstar modem and antenna 4 screw-in ground anchor |
| Snow Removal Package | Above, plus complete snow-melting heater system |

