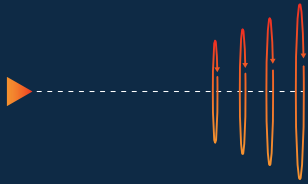


# Wind speed at light speed

 **ZXLidars**

Product Guide 2018



# ZX™

## Turbine-mounted wind measurements from horizontal profiling Lidar

The only Lidar to measure the full shear and veer wind profile of a wind turbine. Accurately and automatically detect complex flow conditions such as wakes. Compensate for turbine movement automatically for accurate measurements above ground level, e.g. hub height.

### ZX™ at a glance:

- Remotely measure the wind ahead of wind turbines from 10m to 300m+.
- See a turbine's true potential with an independent Power Performance Measurement.
- Remove cup anemometer or Nacelle Transfer Function uncertainty or calibration issues.
- Application and campaign-focussed User Interface ensuring ease of data handling.
- Standard industry-accepted methodologies and measurements for: Power Curves, Nacelle Transfer Function calibration including Yaw Alignment, and Wake Detection.
- Extensive 3 year service period ensuring the lowest cost of through-life ownership.
- Suitable for installation on all major turbine platforms.



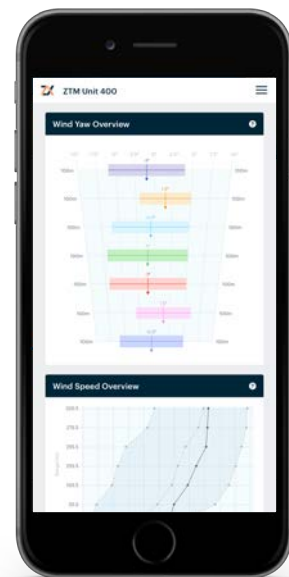
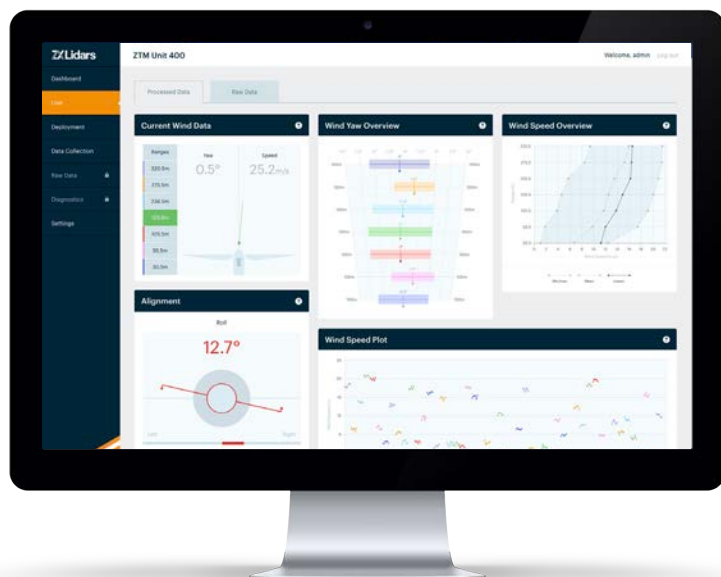
# Optimise wind turbines, wind farms and wind projects

## Improve the Levelised Cost of Energy of a wind farm by:

- Producing more energy for the same cost.
- Reducing operating costs for the same production.
- Increasing project value with more certain wind measurements.

## ZX TM features include:

- Lidar Control Unit (LCU) mounted in the nacelle, Lidar Optical Head (LOH) mounted on the Turbine Integration Kit (TIK) which is mounted on to the nacelle roof.
- 10 Horizontal measurement ranges and up to 13 Vertical Slices at each range – the most comprehensive measurement capability of any Lidar, delivering Rotor Equivalent Wind Speed and Slices for IEC Power Curves.
- Extensive 3 year service life as standard.
- High availability with all laser energy focussed at each measurement range, with low susceptibility to turbine blades due to short measurement integration time (50Hz).
- High Lidar directional positional accuracy on turbine essential for any set point changes relative to rotor alignment using unique patented auto-alignment technique.
- “Application mode” software helping you to define Key Performance Indicators, campaign duration and to include turbine parameters, in addition to the initial installation and easy configuration of the Lidar.



# ZTM Specification

## Measurements

<b>Configurations</b>	3" Lidar optical head, 15 degree half-angle scan 10+ horizontal ranges with configurable dwell times 13 vertical slices at each range
<b>Wind characteristics</b>	Wind speed, shear, veer, wind yaw misalignment, turbulence, rotor equivalent wind speed (REWS)
<b>Scan &amp; Data sample rate</b>	Full rotor scan for REWS measurement 50Hz / 20ms measurements
<b>Speed range</b>	0.5 - 40 m/s (wind loading survivability to 70 m/s)

## Product

<b>Weight</b>	Lidar Optical Head (LOH): 20 kg Lidar Control Unit (LCU): 22.5 kg Turbine Integration Kit (TIK): 33kg
<b>Size</b>	LOH: 356 x 285 x 750 mm LCU: 190 x 490 x 500 mm Cable length: 10 m
<b>IP Rating</b>	LOH: IP 66 LCU: IP 65 Marine atmosphere compliant (IEC 60068-2-11) Operating humidity 0 to 95% RH
<b>Ambient temperature range</b>	LOH: -30 to 50°C / LCU: -40 to 60°C
<b>Warranty and Maintenance</b>	3 year warranty No factory maintenance or calibration required during 3 year service period
<b>AC Power Requirements</b>	Standard climate (-10 to +40°C): 71 W Hot climate (+40 to +60°C): 280 W Cold Climate (-40 to -10°C): 210 W

## Access

<b>Interfaces</b>	Ethernet (RJ45) Wireless Access Point (A, B, G, H; 2.4 & 5 Ghz) Modbus (TCP) GSM Modem
<b>Data storage</b>	24 months
<b>User interface</b>	Web-based interface via laptop, mobile or table (see opposite)
<b>Data outputs</b>	CSV Files Compressed (Optionally Encrypted)
<b>Timestamp</b>	GPS, Local time offset, NTP

**ZXLidars.com**

The Old Barns, Fair Oaks Farm, Hollybush, Ledbury, HR8 1EU, UK

ZX Lidars is a registered trademark of Zephir Ltd., a registered company (SC317594) in Scotland. Our Registered Office is The Greenhouse, Dalry, Castle Douglas, DG7 3XS, UK. Registered No. SC317594. VAT No. GB243692648

The logo for ZX Lidars, featuring a stylized 'ZX' symbol composed of three parallel diagonal lines in orange and dark blue, followed by the word 'Lidars' in a bold, dark blue sans-serif font.