

# Zephyr® Air Quality Monitor

## Specification Sheet



### Key

- a- accuracy may be diminished where Zephyrs are exposed to direct sunlight
- b- lowest tested concentrations are background
- c- estimates of range are based on the theoretical limits of the electronics

### Mechanical

Size	235mm (h) x 160mm (w) x 114mm (d)
Weight	1750g - 2000g (dependent on cartridge)
Operating Parameters	Operating Range: -20°C to +45°C ambient. Relative Humidity range: 15 - 85% continuous* *prolonged exposure outside of this range may irreparably damage the gas sensors.
Construction	Extruded aluminium body, hard anodised with ASA-PC end mouldings. Stainless steel mounting brackets for 80-140mm diameter poles.

### Electrical

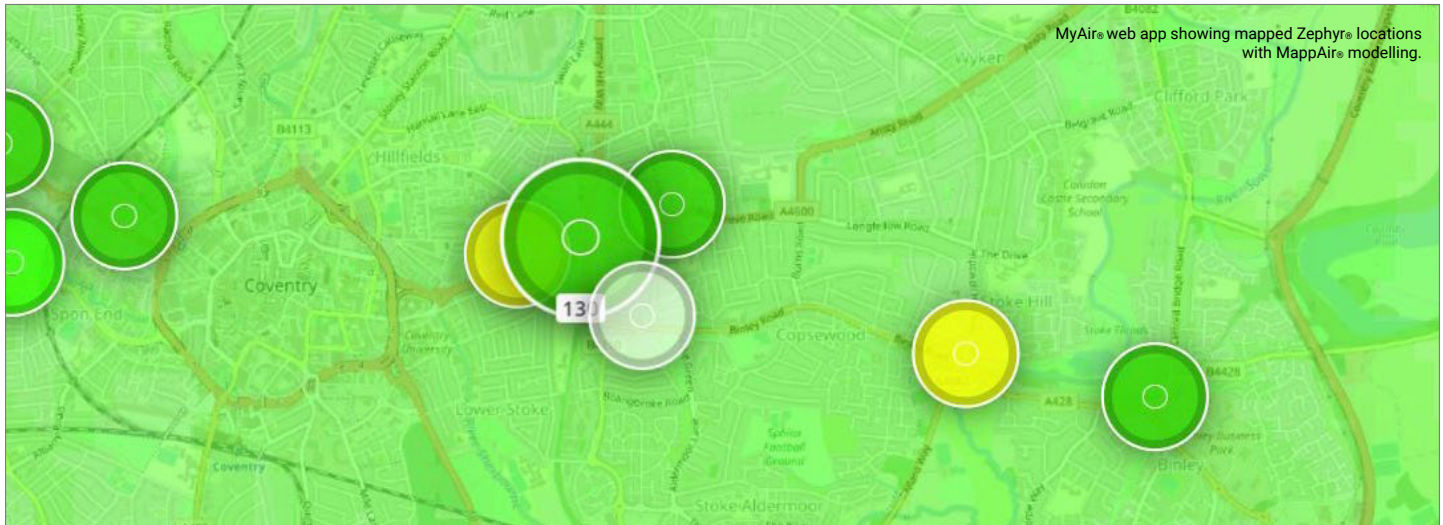
Power Inputs	12-32V DC (~13.8V for cars and LCV, ~27.6V for HGV) or solar powered applications (~18-20V)	
IP Rated Zephyr® Monitor	IP64	
IP Rated Power Supply Unit (Optional)	IP67	
IP Rated Power Supply Unit (Indoor use only)	IP2X	
Solar Panel (Optional)	50WP output Bracket, mount and straps included Dimensions: 581mm (h) x 509mm (w) x 30mm (d) (22.9 x 20 x 1.18in) Weight: 3.5kg / 7.72lbs Weight including bracket: 4.75kg / 10.472lbs	
External Battery Connector (Optional)	Connect to an IP rated external 12V battery with 120Ah capacity (recommended). Based on a normal sample* rate of 10s, this should enable operation for up to 50 days and on low power mode 100 days. *operational duration will be affected with changes to sample rate and cartridge configuration.	
Power Draw	Max: 19W at 19V Nominal: ~ 0.2W at 19V Elxon charge code: 8300003002100* *Standard cartridge configuration only	
Internal Battery	Li-Ion ~55 Whr. Charged by MPPT battery charging controller to maximise solar panel output. Increase battery capacity option available	
Battery Run Time	Normal mode: 3 days, 17 hours* *with 1 standard cartridge	Low Power/Winter Mode: 7 days, 18 hours* *with a standard cartridge

<b>Cartridge Options</b> - all Zephyrs come with a cartridge based system that uses active sampling					
Measure	Standard Cartridge	Standard + Cartridge	Enhanced Cartridge	Enhanced + Cartridge	Enhanced ++ Cartridge
Nitrogen dioxide (NO <sub>2</sub> )	•		•	•	•
Nitric oxide (NO)	•		•	•	•
Ozone (O <sub>3</sub> )	•		•	•	•
Particulate Matter (PM <sub>1</sub> )	•		•	•	•
Particulate Matter (PM <sub>2.5</sub> )	•		•	•	•
Particulate Matter (PM <sub>10</sub> )	•		•	•	•
Carbon monoxide (CO)			•	•	•
Sulphur dioxide (SO <sub>2</sub> )			•	•	•
Hydrogen sulphide (H <sub>2</sub> S)			•	•	•
Carbon dioxide (CO <sub>2</sub> ) (optional)		•		•	•
Total Organic Volatile Compounds (TVOCs) (optional)		•			•
Temperature	•		•	•	•
Relative Humidity	•		•	•	•

<b>Estimated Accuracy, Range and Limits of Detection</b>						
Measure	Estimated Accuracy		Range		Limits of Detection	
	µg/m <sup>3</sup>   mg/m <sup>3</sup>	ppb   ppm	µg/m <sup>3</sup>   mg/m <sup>3</sup>	ppb   ppm	µg/m <sup>3</sup>   mg/m <sup>3</sup>	ppb   ppm
Nitrogen dioxide (NO <sub>2</sub> )	10 µg/m <sup>3</sup>	5.2 ppbV	0 - 20,000 µg/m <sup>3</sup> <sup>c</sup>	0 - 10,000 ppbV <sup>c</sup>	1.5 µg/m <sup>3</sup>	0.78 ppbV
Nitric oxide (NO)	10 µg/m <sup>3</sup>	8 ppbV	0 - 6,000 µg/m <sup>3</sup> <sup>c</sup>	0 - 5,000 ppbV <sup>c</sup>	1.5 µg/m <sup>3</sup>	1.20 ppbV
Ozone (O <sub>3</sub> )	15 µg/m <sup>3</sup>	7.5 ppbV	0 - 15,000 µg/m <sup>3</sup> <sup>c</sup>	0 - 7,500 ppbV <sup>c</sup>	1.5 µg/m <sup>3</sup>	0.75 ppbV
Particulate Matter (PM <sub>1</sub> )	5 µg/m <sup>3</sup>		0 - 20,000 µg/m <sup>3</sup> <sup>c</sup>		0.2 µg/m <sup>3</sup>	
Particulate Matter (PM <sub>2.5</sub> )	5 µg/m <sup>3</sup>		0 - 20,000 µg/m <sup>3</sup> <sup>c</sup>		1.3 µg/m <sup>3</sup>	
Particulate Matter (PM <sub>10</sub> )	5 µg/m <sup>3</sup>		0 - 20,000 µg/m <sup>3</sup> <sup>c</sup>		1.4 µg/m <sup>3</sup>	
Carbon monoxide (CO)	0.3 mg/m <sup>3</sup>	0.3 ppmV	0 - 40 mg/m <sup>3</sup> <sup>c</sup>	0 - 35 ppmV <sup>c</sup>	0.03 mg/m <sup>3</sup>	0.02 ppmV
Sulphur dioxide (SO <sub>2</sub> )	20 µg/m <sup>3</sup>	7.6 ppbV	0 - 6,500 µg/m <sup>3</sup> <sup>c</sup>	0 - 2,500 ppbV <sup>c</sup>	1.5 µg/m <sup>3</sup>	0.57 ppbV
Hydrogen sulphide (H <sub>2</sub> S)	5 µg/m <sup>3</sup>	3.6 ppbV	0 - 1,500 µg/m <sup>3</sup> <sup>c</sup>	0 - 1,000 ppbV <sup>c</sup>	1.5 µg/m <sup>3</sup>	1.08 ppbV
Carbon dioxide (CO <sub>2</sub> ) (optional)	30 ppmV		0 - 5,000 ppm			
Total Organic Volatile Compounds (TVOCs) (optional)			0 - 15,000 ppbV <sup>c</sup>		1 ppbV	
Temperature	5°C <sup>a</sup>		-20°C - 45°C ambient			
Relative Humidity	5% <sup>a</sup>		15 - 85% continuous* *prolonged exposure outside of this range may irreparably damage the gas sensors.			

<b>Location Sensing</b>	
High Sensitivity GNSS	GPS, GLONASS, Galileo and Beidou module with internal active antenna.
<b>Internal Storage</b>	
16GB SD Card	Sufficient for 32 million measurement sets.
<b>Data Handling</b>	
Web Services Infrastructure	Data infrastructure is hosted in the cloud to give high service availability, resilience. and regional selection
Communication Technologies	Wi-Fi (802.11 b/g/n 2.4GHz) Bluetooth (2.4GHz v4.2 BR/EDR + BLE compliant) GSM 2G 4G (NB-IoT and LTE Cat-M1)* RS232*, RS485*  *Optional

MyAir® Web App	<p>View and download data via a URL link to the MyAir web app.</p> <p>MyAir® functionality includes:</p> <ul style="list-style-type: none"> <li>- Mapped Zephyr® locations</li> <li>- Data charting and download via KML or CSV</li> <li>- Additional data overlays including global MappAir and 3<sup>rd</sup> party data</li> <li>- Satellite, AURN and Air Quality Management Area map overlays</li> <li>- Source apportionment</li> <li>- Historic and forecast data</li> </ul> <p>Our server via the customer username &amp; password will hold collected Zephyr® data until the of the subscription.</p>
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	Normal Mode	Low Power/Winter Mode
Sample Rate:*	10 seconds	1 minute

\*for standard cartridge. Custom modes can be configured

#### Data Integrations

Stratos Traffic Management System	Compatible with <a href="#">Yunex Traffic</a> (formerly Siemens Mobility) traffic management system
MindSphere	Integrated with <a href="#">Siemens MindSphere</a> Industrial IoT Solution

#### Third Party Device Integrations

RS232 / RS485	Zephyr® input power can be passed through to the connector (9-30V) to supply the auxilliary hardware with up to 1A. We are able to configure data connections for a wide range of additional hardware, please contact us if your proposed device is not listed below.
Other Sensor Providers that Work with the Zephyr®	Gill MaxiMet range - GMX100, 101, 200, 240, 300, 301, 400, 500, 501, 531, 541, 550, 551 and 600. Any other integrations are available upon application.

#### Warranty

Warranty	Full warranty on manufacturer faults
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