## Zephyr<sup>®</sup> Air Quality Sensor Specification Sheet





|   | Kay   |  |   |   |   |   |  |  |  |
|---|---|--|---|---|---|---|--|--|--|
|   | <sup>a</sup> - accuracy may be diminished where Zenbyrs are exposed to direct suplight  |  |   |   |   |   |  |  |  |
|   | - accuracy may be diminished where Zephyrs are exposed to direct sunlight   |  |   |   |   |   |  |  |  |
|   | <sup>o</sup> - lowest tested concentrations are background  |  |   |   |   |   |  |  |  |
| Mashantiaal   | - estimates of  | range are based o  | on the theoretical lir  | nits of the electr  | onics   |   |  |  |  |
| Nechantical   | 225mm (b) x 160mm (u) x 114mm (d)   |  |   |   |   |   |  |  |  |
| Size  | 235mm (h) x 160mm (w) x 114mm (d)   |  |   |   |   |   |  |  |  |
|   | 1750g - 2000g (dependent on cartridge)  |  |   |   |   |   |  |  |  |
| Operating Temperatures  | -20°C to +45°C  |  |   |   |   |   |  |  |  |
| Construction  | Extruded aluminium body, hard anodised with ASA-PC end mouldings.<br>Stainless steel mounting brackets for 80-140mm diameter poles.   |  |   |   |   |   |  |  |  |
| IP Rating   | IP65 - without ca<br>IP63 - with catric   | artridges<br>dges  |   |   |   |   |  |  |  |
| Electrical  |   |  |   |   |   |   |  |  |  |
| Power Inputs  | 12-32V DC via IP68 connector for automotive applications (~13.8V for cars and LCV, ~27.6V for HGV) or solar powered applications (~18-20V)  |  |   |   |   |   |  |  |  |
| Internal Battery  | Li-Ion ~55 Whr. Charged by MPPT battery charging controller to maximise solar panel output.<br>Increase battery capacity option available   |  |   |   |   |   |  |  |  |
| Power Draw  | Max: 19W at 19V<br>Nominal: ~ 0.2W at 19V   |  |   |   |   |   |  |  |  |
| Battery Run Time  | Normal mode: 4 days   |  |   |   | Low Power/Wint options  | Low Power/Winter Mode: 2-4 days dependant on configuration options  |  |  |  |
| IP Rated Power Supply Unit  | IP67  |  |   |   |   |   |  |  |  |
| Solar Panel (Optional)  | 50WP output<br>Bracket, mount and straps included<br>Dimensions: 530mm (h) x 670mm (w) x 250mm (d)<br>Mass: 5.5kg   |  |   |   |   |   |  |  |  |
| Contridge Options   | huro coroc with c   |  |   |   |   |   |  |  |  |
| Cartinuge Options - an Zep  | myrs corne with a   | cartriage based sy   | /stem that uses act   | tive sampling   |   |   |  |  |  |
|   | Standard  | Enhanced   | Estimated Acc   | tive sampling   | Range   |   | Limits of Dete   | ction  |  |
| Measure   | Standard<br>Cartridge   | Enhanced<br>Cartridge  | Estimated Acc<br>µg/m <sup>3</sup>   mg/m <sup>3</sup>  | tive sampling<br>curacy<br>ppb   ppm  | Range<br>µg/m³   mg/m³  | ppb   ppm   | Limits of Dete<br>µg/m <sup>3</sup>   mg/m <sup>3</sup>  | ction<br>ppb   ppm   |  |
| Measure   | Standard<br>Cartridge   | Enhanced<br>Cartridge  | Estimated Acc<br>µg/m <sup>3</sup>   mg/m <sup>3</sup><br>10 µg/m <sup>3</sup>  | ppb   ppm       5.2 ppbV  | Range           μg/m³   mg/m³           0 - 20,000           μg/m³°   | <b>ppb   ppm</b><br>0 - 10,000<br>ppbV °  | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³   | ction<br>ppb   ppm<br>4 ppbV   |  |
| Measure<br>NO2<br>NO  | Standard<br>Cartridge   | Enhanced<br>Cartridge  | stem that uses act<br>Estimated Acc<br>μg/m <sup>3</sup>   mg/m <sup>3</sup><br>10 μg/m <sup>3</sup>  | tive sampling       curacy       ppb   ppm       5.2 ppbV       8 ppbV  | Range           μg/m³   mg/m³           0 - 20,000<br>μg/m³°           0 - 6,000<br>μg/m³°  | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °  | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³<br>10 µg/m³   | ppb   ppm       4 ppbV       8 ppbV  |  |
| Measure       NO2       NO       O3   | •<br>•  | Enhanced<br>Cartridge  | In that uses act<br>Estimated Acc<br>μg/m <sup>3</sup>   mg/m <sup>3</sup><br>10 μg/m <sup>3</sup><br>10 μg/m <sup>3</sup><br>15 μg/m <sup>3</sup>  | Intervention       ppb   ppm       5.2 ppbV       8 ppbV       7.5 ppbV   | Range           μg/m³   mg/m³           0 - 20,000 μg/m³°           0 - 6,000 μg/m³°           0 - 6,000 μg/m³°           0 - 15,000 μg/m³°   | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °   | Limits of Dete<br>μg/m³   mg/m³<br>8 μg/m³<br>10 μg/m³<br>10 μg/m³   | ppb   ppm       4 ppbV       8 ppbV       8 ppbV   |  |
| Measure<br>NO2<br>NO<br>O <sub>3</sub><br>PM <sub>1</sub>   | Standard<br>Cartridge   | Enhanced<br>Cartridge<br>•<br>•<br>•   | In that uses active th | Intervention       tracy       ppb   ppm       5.2 ppbV       8 ppbV       7.5 ppbV   | Range           μg/m³   mg/m³           0 - 20,000<br>μg/m³c           0 - 6,000<br>μg/m³c           0 - 15,000<br>μg/m³c           0 - 15,000<br>μg/m³c           0 - 20,000 μg/m³   | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °   | Limits of Dete<br>μg/m³   mg/m³<br>8 μg/m³<br>10 μg/m³<br>10 μg/m³<br>2 μg/m³  | ppb   ppm       4 ppbV       8 ppbV       8 ppbV   |  |
| Cartinuge Options - all 2ep           Measure           NO2           NO           O3           PM1           PM25  | Standard<br>Cartridge   | Enhanced<br>Cartridge  | In that uses act<br>Estimated Acc<br>μg/m <sup>3</sup>   mg/m <sup>3</sup><br>10 μg/m <sup>3</sup><br>10 μg/m <sup>3</sup><br>15 μg/m <sup>3</sup><br>5 μg/m <sup>3</sup>   | ppb   ppm       5.2 ppbV       8 ppbV       7.5 ppbV  | Range           µg/m³   mg/m³           0 - 20,000<br>µg/m³c           0 - 6,000<br>µg/m³c           0 - 6,000<br>µg/m³c           0 - 15,000<br>µg/m³c           0 - 20,000 µg/m³           0 - 20,000 µg/m³   | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °   | Limits of Dete<br>μg/m <sup>3</sup>   mg/m <sup>3</sup><br>8 μg/m <sup>3</sup><br>10 μg/m <sup>3</sup><br>10 μg/m <sup>3</sup><br>2 μg/m <sup>3</sup><br>5 μg/m <sup>3</sup> | ppb   ppm           4 ppbV           8 ppbV           8 ppbV   |  |
| Cartinuge Options - all 2ep           Measure           NO2           NO           O3           PM1           PM25           PM10   | Standard<br>Cartridge   | Enhanced<br>Cartridge<br>•<br>•<br>•<br>•<br>•<br>•  | Item that uses activated for the second                                 | Intervention       ppb   ppm       5.2 ppbV       8 ppbV       7.5 ppbV   | Range           μg/m³   mg/m³           0 - 20,000 μg/m³°           0 - 6,000 μg/m³°           0 - 15,000 μg/m³°           0 - 20,000 μg/m³           0 - 20,000 μg/m³           0 - 20,000 μg/m³           0 - 20,000 μg/m³  | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °   | Limits of Dete<br>μg/m³   mg/m³<br>8 μg/m³<br>10 μg/m³<br>10 μg/m³<br>2 μg/m³<br>5 μg/m³<br>5 μg/m³  | ppb   ppm       4 ppbV       8 ppbV       8 ppbV   |  |
| Cartinuge Options - all 2ep           Measure           NO2           NO           O3           PM1           PM25           PM10           CO  | Standard<br>Cartridge   | Enhanced<br>Cartridge<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•   | Item that uses activated for the second s                        | tve sampling       curacy       ppb   ppm       5.2 ppbV       8 ppbV       7.5 ppbV       0.3 ppmV   | Range           μg/m³   mg/m³           0 - 20,000<br>μg/m³°           0 - 6,000<br>μg/m³°           0 - 15,000<br>μg/m³°           0 - 20,000 μg/m³  | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °           0 - 35 ppmV °   | Limits of Dete<br>μg/m³   mg/m³<br>8 μg/m³<br>10 μg/m³<br>10 μg/m³<br>2 μg/m³<br>5 μg/m³<br>5 μg/m³<br>0.23 mg/m³  | ppb   ppm       4 ppbV       8 ppbV       8 ppbV       0.2 ppmV  |  |
| Callinge Options - all 2ep           Measure           NO2           NO           O3           PM1           PM25           PM10           CO           SO2   | Standard<br>Cartridge   | Enhanced<br>Cartridge  | Item that uses act           Estimated Acc           µg/m³   mg/m³           10 µg/m³           10 µg/m³           15 µg/m³           5 µg/m³           5 µg/m³           0.3 mg/m³           20 µg/m³  | Ive sampling           curacy           ppb   ppm           5.2 ppbV           8 ppbV           7.5 ppbV           0.3 ppmV           7.6 ppbV                    | Range           μg/m³   mg/m³           0 - 20,000<br>μg/m³c           0 - 6,000<br>μg/m³c           0 - 15,000<br>μg/m³c           0 - 20,000 μg/m³           0 - 20,000 μg/m³           0 - 20,000 μg/m³c           0 - 40 mg/m³c           0 - 6,500<br>μg/m³c   | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °           0 - 35 ppmV °           0 - 35 ppmV °                               | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³<br>10 µg/m³<br>10 µg/m³<br>2 µg/m³<br>5 µg/m³<br>0.23 mg/m³<br>8 µg/m³  | ppb   ppm       4 ppbV       8 ppbV       8 ppbV       0.2 ppmV       3 ppbV                           |  |
| Callinge Options - all 2ep           Measure           NO2           NO           O3           PM1           PM25           PM10           CO           SO2           H2S   | Standard<br>Cartridge   | Enhanced<br>Cartridge  | Item that uses act           Estimated Acc           µg/m³   mg/m³           10 µg/m³           10 µg/m³           10 µg/m³           5 µg/m³           5 µg/m³           0.3 mg/m³           20 µg/m³           5 µg/m³  | Ive sampling           curacy           ppb   ppm           5.2 ppbV           8 ppbV           7.5 ppbV           0.3 ppmV           7.6 ppbV           3.6 ppbV | Range           µg/m³   mg/m³           0 - 20,000<br>µg/m³c           0 - 6,000<br>µg/m³c           0 - 15,000<br>µg/m³c           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 40 mg/m³c           0 - 6,500<br>µg/m³c           0 - 1,500 µg/m³c   | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °           0 - 35 ppmV °           0 - 35 ppmV °           0 - 2,500 ppbV °    | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³<br>10 µg/m³<br>10 µg/m³<br>2 µg/m³<br>5 µg/m³<br>0.23 mg/m³<br>8 µg/m³<br>25 µg/m³  | ppb   ppm       4 ppbV       8 ppbV       8 ppbV       0.2 ppmV       3 ppbV       18 ppbV             |  |
| Call those options = all 2ep           Measure           NO2           NO           O3           PM1           PM25           PM10           CO           SO2           H2S           CO2 (optional)  | Standard<br>Cartridge   | Cartridge based sy<br>Enhanced<br>Cartridge<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>• | Item that uses act           Estimated Acc           µg/m³   mg/m³           10 µg/m³           10 µg/m³           15 µg/m³           5 µg/m³           5 µg/m³           0.3 mg/m³           20 µg/m³           5 µg/m³           30 ppmV  | Ive sampling           puracy           ppb   ppm           5.2 ppbV           8 ppbV           7.5 ppbV           0.3 ppmV           7.6 ppbV           3.6 ppbV | Range           µg/m³   mg/m³           0 - 20,000<br>µg/m³c           0 - 6,000<br>µg/m³c           0 - 15,000<br>µg/m³c           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 40 mg/m³c           0 - 40 mg/m³c           0 - 1,500 µg/m³c           0 - 5,000 µg/m³c   | ppb   ppm           0 - 10,000           ppbV°           0 - 5,000 ppbV°           0 - 7,500 ppbV°           0 - 35 ppmV°           0 - 2,500 ppbV°           0 - 1,000 ppbV°       | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³<br>10 µg/m³<br>10 µg/m³<br>2 µg/m³<br>5 µg/m³<br>0.23 mg/m³<br>8 µg/m³<br>25 µg/m³<br>405 ppmV <sup>b</sup>                       | ppb   ppm         4 ppbV         8 ppbV         8 ppbV         0.2 ppmV         3 ppbV         18 ppbV |  |
| Cartinuge Options - all 2ep           Measure           NO2           NO           O3           PM1           PM25           PM10           CO           SO2           H2S           CO2 (optional)           TVOCS (optional)  | Standard<br>Cartridge   | Cartridge based sy<br>Enhanced<br>Cartridge<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>• | Istem that uses act         Istem that uses act         µg/m³   mg/m³         10 µg/m³         10 µg/m³         15 µg/m³         5 µg/m³         5 µg/m³         0.3 mg/m³         20 µg/m³         5 µg/m³         30 ppmV         -   | Ive sampling           curacy           ppb   ppm           5.2 ppbV           8 ppbV           7.5 ppbV           0.3 ppmV           7.6 ppbV           3.6 ppbV | Range           µg/m³   mg/m³           0 - 20,000<br>µg/m³°           0 - 6,000<br>µg/m³°           0 - 15,000<br>µg/m³°           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 40 mg/m³°           0 - 6,500<br>µg/m³°           0 - 5,000 µg/m³           0 - 5,000 µg/m³°           0 - 1,500 µg/m³°  | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °           0 - 35 ppmV °           0 - 35 ppmV °           0 - 2,500 ppbV °    | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³<br>10 µg/m³<br>10 µg/m³<br>2 µg/m³<br>5 µg/m³<br>0.23 mg/m³<br>8 µg/m³<br>25 µg/m³<br>25 µg/m³<br>405 ppmV <sup>b</sup><br>-      | ppb   ppm         4 ppbV         8 ppbV         8 ppbV         0.2 ppmV         3 ppbV         18 ppbV |  |
| Call thuge Options = all 2ep           Measure           NO2           NO           O3           PM1           PM25           PM10           CO           SO2           H2S           CO2 (optional)           TVOCs (optional)           Pressure  | Standard<br>Cartridge   | Cartridge based sy<br>Enhanced<br>Cartridge<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>• | Istem that uses act         Istem that uses act         Estimated Acc         µg/m³   mg/m³         10 µg/m³         10 µg/m³         15 µg/m³         5 µg/m³         5 µg/m³         0.3 mg/m³         20 µg/m³         5 µg/m³         30 ppmV         -         1.2 hPa   | ive sampling         curacy         ppb   ppm         5.2 ppbV         8 ppbV         7.5 ppbV         0.3 ppmV         7.6 ppbV         3.6 ppbV                 | Range           µg/m³   mg/m³           0 - 20,000<br>µg/m³c           0 - 6,000<br>µg/m³c           0 - 15,000<br>µg/m³c           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 40 mg/m³c           0 - 6,500<br>µg/m³c           0 - 5,000 µg/m³           0 - 1,500 µg/m³c           0 - 1,500 µg/m³c           0 - 5,000 ppm           0 - 15,000 ppbV G           300 - 1,100 hPa  | ppb   ppm         0 - 10,000         ppbV °         0 - 5,000 ppbV °         0 - 7,500 ppbV °         0 - 35 ppmV °         0 - 35 ppmV °         0 - 1,000 ppbV °                  | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³<br>10 µg/m³<br>10 µg/m³<br>2 µg/m³<br>5 µg/m³<br>0.23 mg/m³<br>8 µg/m³<br>25 µg/m³<br>25 µg/m³<br>405 ppmV b<br>-<br>-            | ppb   ppm       4 ppbV       8 ppbV       8 ppbV       0.2 ppmV       3 ppbV       18 ppbV             |  |
| Call thuge options = all 2epMeasure $NO_2$ $NO$ $O_3$ $PM_1$ $PM_{25}$ $PM_{10}$ $CO$ $SO_2$ $H_2S$ $CO_2$ (optional)TVOCs (optional)PressureTemperature  | Standard<br>Cartridge   | Cartridge based sy<br>Enhanced<br>Cartridge<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>• | Istem that uses act         Istem that uses act         Estimated Acc         µg/m³   mg/m³         10 µg/m³         10 µg/m³         15 µg/m³         5 µg/m³         5 µg/m³         0.3 mg/m³         20 µg/m³         5 µg/m³         30 ppmV         -         1.2 hPa         5°C ³   | Ive sampling         curacy         ppb   ppm         5.2 ppbV         8 ppbV         7.5 ppbV         0.3 ppmV         7.6 ppbV         3.6 ppbV                 | Range           µg/m³   mg/m³           0 - 20,000<br>µg/m³c           0 - 6,000<br>µg/m³c           0 - 15,000<br>µg/m³c           0 - 20,000 µg/m³           0 - 20,000 µg/m³c           0 - 40 mg/m³c           0 - 6,500<br>µg/m³c           0 - 1,500 µg/m³c           0 - 5,000 ppm           0 - 15,000 ppV 0           300 - 1,100 hPa           -20°C - 45°C   | ppb   ppm           0 - 10,000           ppbV°           0 - 5,000 ppbV°           0 - 7,500 ppbV°           0 - 35 ppmV°           0 - 2,500 ppbV°           0 - 1,000 ppbV°       | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³<br>10 µg/m³<br>2 µg/m³<br>2 µg/m³<br>5 µg/m³<br>0.23 mg/m³<br>8 µg/m³<br>25 µg/m³<br>405 ppmV b<br>-<br>-<br>-<br>-               | ppb   ppm       4 ppbV       8 ppbV       8 ppbV       0.2 ppmV       3 ppbV       18 ppbV             |  |
| Cartinuge options = all 2ep         Measure         NO2         NO         O3         PM1         PM25         PM10         CO         SO2         H2S         CO2 (optional)         TVOCs (optional)         Pressure         Temperature         Relative Humidity   | Standard<br>Cartridge   | Cartridge based sy<br>Enhanced<br>Cartridge<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>• | Istem that uses act         Istem that uses act         Estimated Acc         µg/m³   mg/m³         10 µg/m³         10 µg/m³         15 µg/m³         5 µg/m³         5 µg/m³         0.3 mg/m³         20 µg/m³         30 ppmV         -         1.2 hPa         5°C °         5% °  | ive sampling         curacy         ppb   ppm         5.2 ppbV         8 ppbV         7.5 ppbV         0.3 ppmV         7.6 ppbV         3.6 ppbV                 | Range           µg/m³   mg/m³           0 - 20,000<br>µg/m³°           0 - 6,000<br>µg/m³°           0 - 15,000<br>µg/m³°           0 - 20,000 µg/m³           0 - 40 mg/m³°           0 - 4,00 mg/m³°           0 - 5,500<br>µg/m³°           0 - 5,000 ppm           0 - 15,000 ppbV            300 - 1,100 hPa           -20°C - 45°C           0 - 100%   | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °           0 - 35 ppmV °           0 - 2,500 ppbV °           0 - 1,000 ppbV ° | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³<br>10 µg/m³<br>2 µg/m³<br>5 µg/m³<br>0.23 mg/m³<br>0.23 mg/m³<br>8 µg/m³<br>25 µg/m³<br>405 ppmV b<br>-<br>-<br>-<br>-<br>-       | ppb   ppm         4 ppbV         8 ppbV         8 ppbV         0.2 ppmV         3 ppbV         18 ppbV |  |
| Measure         NO2         NO         O3         PM1         PM25         PM10         CO         SO2         H2S         CO2 (optional)         TVOCs (optional)         Pressure         Temperature         Relative Humidity         Location Sensing  | Standard<br>Cartridge     O   | Cartridge based sy<br>Enhanced<br>Cartridge<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>• | Istem that uses act         Istem that uses act         Estimated Acc         µg/m³   mg/m³         10 µg/m³         10 µg/m³         15 µg/m³         5 µg/m³         5 µg/m³         0.3 mg/m³         20 µg/m³         5 µg/m³         30 ppmV         -         1.2 hPa         5% a  | Ive sampling         curacy         ppb   ppm         5.2 ppbV         8 ppbV         7.5 ppbV         0.3 ppmV         7.6 ppbV         3.6 ppbV                 | Range           µg/m³   mg/m³           0 - 20,000<br>µg/m³c           0 - 6,000<br>µg/m³c           0 - 15,000<br>µg/m³c           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 40 mg/m³c           0 - 6,500<br>µg/m³c           0 - 5,000 µg/m³           0 - 1,500 µg/m³c           0 - 5,000 ppm           0 - 15,000 ppM of the second provided p | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °           0 - 35 ppmV °           0 - 2,500 ppbV °           0 - 1,000 ppbV ° | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³<br>10 µg/m³<br>2 µg/m³<br>2 µg/m³<br>5 µg/m³<br>0.23 mg/m³<br>8 µg/m³<br>25 µg/m³<br>405 ppmV b<br>-<br>-<br>-<br>-<br>-<br>-     | ppb   ppm         4 ppbV         8 ppbV         8 ppbV         0.2 ppmV         3 ppbV         18 ppbV |  |
| Cartinuge options - all 2epMeasure $NO_2$ $NO$ $O_3$ $PM_1$ $PM_{25}$ $PM_{10}$ $CO$ $SO_2$ $H_2S$ $CO_2$ (optional)TVOCs (optional)PressureTemperatureRelative HumidityLocation SensingHigh Sensitivity GNSS   | Standard<br>Cartridge   | Cartridge based sy<br>Enhanced<br>Cartridge<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>• | Item that uses act         Istem that uses act         Estimated Acc         µg/m³   mg/m³         10 µg/m³         10 µg/m³         15 µg/m³         5 µg/m³         5 µg/m³         0.3 mg/m³         20 µg/m³         30 ppmV         -         1.2 hPa         5°C °         5% °         u module with inte  | <pre>ive sampling curacy ppb   ppm 5.2 ppbV 8 ppbV 7.5 ppbV 0.3 ppmV 3.6 ppbV 3.6 ppbV</pre>  | Range           µg/m³   mg/m³           0 - 20,000           µg/m³°           0 - 6,000           µg/m³°           0 - 15,000           µg/m³°           0 - 20,000 µg/m³°           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 20,000 µg/m³           0 - 40 mg/m³°           0 - 6,500           µg/m³°           0 - 5,000 pg/m³°           0 - 5,000 pg/m³°           0 - 15,000 pg/m³°           0 - 100%   | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °           0 - 35 ppmV °           0 - 2,500 ppbV °           0 - 1,000 ppbV ° | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³<br>10 µg/m³<br>2 µg/m³<br>2 µg/m³<br>5 µg/m³<br>0.23 mg/m³<br>8 µg/m³<br>25 µg/m³<br>405 ppmV b<br>-<br>-<br>-<br>-<br>-<br>-     | ppb   ppm         4 ppbV         8 ppbV         8 ppbV         0.2 ppmV         3 ppbV         18 ppbV |  |
| Cartifuge options - all 2ep         Measure         NO2         NO         O3         PM1         PM25         PM10         CO         SO2         H2S         CO2 (optional)         TVOCs (optional)         Pressure         Temperature         Relative Humidity         Location Sensing         High Sensitivity GNSS         Internal Storage | Standard<br>Cartridge  Cartridge  Cartridge Cartridge Cartridge Cartridge Cartridge  Cartridge  Cartridge  Cartridge  Cart | Cartridge based sy<br>Enhanced<br>Cartridge<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>• | Istem that uses act         Istem that uses act         Estimated Acc         µg/m³   mg/m³         10 µg/m³         10 µg/m³         15 µg/m³         5 µg/m³         5 µg/m³         0.3 mg/m³         20 µg/m³         30 ppmV         -         1.2 hPa         5% a         u module with inte   | <pre>tve sampling curacy ppb   ppm 5.2 ppbV 8 ppbV 7.5 ppbV 0.3 ppmV 7.6 ppbV 3.6 ppbV 3.6 ppbV </pre>  | Range           µg/m³   mg/m³           0 - 20,000<br>µg/m³°           0 - 6,000<br>µg/m³°           0 - 15,000<br>µg/m³°           0 - 20,000 µg/m³           0 - 5,000 µg/m³           0 - 6,500<br>µg/m³°           0 - 5,000 ppm           0 - 15,000 ppbV            300 - 1,100 hPa           -20°C - 45°C           0 - 100%  | ppb   ppm           0 - 10,000           ppbV °           0 - 5,000 ppbV °           0 - 7,500 ppbV °           0 - 35 ppmV °           0 - 2,500 ppbV °           0 - 1,000 ppbV ° | Limits of Dete<br>µg/m³   mg/m³<br>8 µg/m³<br>10 µg/m³<br>2 µg/m³<br>5 µg/m³<br>0.23 mg/m³<br>0.23 mg/m³<br>25 µg/m³<br>25 µg/m³<br>405 ppmV b<br>-<br>-<br>-<br>-<br>-      | ppb   ppm         4 ppbV         8 ppbV         8 ppbV         0.2 ppmV         3 ppbV         18 ppbV |  |

| Data Handling  |   |  |  |  |  |  |
|--|---|--|--|--|--|--|
| GSM module with internal antenna                     | During the sensing programme, data is collected inside the unit is uploaded to the database at configurable intervals   |  |  |  |  |  |
| Web Services Infrastructure                          | Data infrastructure is hosted in the cloud to give high service availability, resilience. and regional selection  |  |  |  |  |  |
| Communication<br>Technologies                        | Wi-Fi (802.11 b/g/n 2.4GHz)<br>Bluetooth (2.4GHz v4.2 BR/EDR + BLE compliant)<br>GSM<br>2G<br>4G<br>5G technologies (NB-IoT and LTE Cat-M1)*<br>RS232*, RS485*<br>*Optional   |  |  |  |  |  |
| Data Access  |   |  |  |  |  |  |
| MyAir® Web App                                       | View and download data via a URL link to the MyAir web app.<br>MyAir functionality includes:<br>- Mapped Zephyr locations<br>- Data charting and download via KML or CSV<br>- Additonal data overlays including global MappAir and 3 <sup>rd</sup> party data<br>- Satellite, AURN and Air Quality Management Area map overlays<br>- Source apportionment<br>- Historic and forecast data<br>Our server via the customer username & password will hold collected Zephyr® data until the of subscription |  |  |  |  |  |
| Zephyr <sup>®</sup> API                              | Data can be integrated into existing systems such as traffic management   | nt, environmental reports and GIS.   |  |  |  |  |
| Four Oaks<br>Berkswell                               | Redford<br>Allesier<br>103<br>94<br>133<br>94<br>133<br>144<br>129<br>131<br>158<br>144<br>129<br>158<br>158<br>158<br>158<br>158<br>158<br>158<br>158<br>158<br>158  | Manuel Estate<br>Base<br>30 <sup>34</sup><br>125<br>141<br>121<br>Mapped Zephyr® locations, AQMA and<br>Mapped Zephyr® locations, AQMA and |  |  |  |  |
| Default Sensing Program                              |   |  |  |  |  |  |
|  | Standard Cartridge  | Enhanced Cartridge   |  |  |  |  |
| Sample Rate:   |   | 60 seconds   |  |  |  |  |
| Custom modes can be confic                           | 15 minutes  | ou minutes   |  |  |  |  |
| Data Integrations                                    |   |  |  |  |  |  |
| Stratos  | Compatible with Siemens Mobility Stratos traffic management system  |  |  |  |  |  |
| Third Party Device Integr                            | rations   |  |  |  |  |  |
| 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<br>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.   |  |  |  |  |  |
| Subscription Includes                                |   |  |  |  |  |  |
| Cartridge Calibration                                | All calibration and testing carried out at the EarthSense manufacturing facility to near-reference site standard with no in-field calibration required.   |  |  |  |  |  |
| Data Hosting & SIM                                   | All costs included  |  |  |  |  |  |
| Continous Monitoring                                 | In-nouse data scientist carry out remote monitoring of sensor performance to ensure no loss of data quality   |  |  |  |  |  |
| Replacement Cartridges                               | Inroughout the duration of your subscription  |  |  |  |  |  |
| Power Supply   | Internal rechargeable battery with option of solar panel  |  |  |  |  |  |
| Data Access  |   |  |  |  |  |  |
| Warranty   | Comprenensive service levels and technical assistance   |  |  |  |  |  |
| Support Lovels                                       |   |  |  |  |  |  |
| Support Levels                                       |   |  |  |  |  |  |
| Supported Calls                                      | All support calls will be answered on average within 30 seconds.<br>EarthSense will use reasonable endeavours to provide a plan of action for all support calls within 7.5 Supported Hours of the call being logged.  |  |  |  |  |  |
|  |   |  |  |  |  |  |