Technical Note

AQI Calculation

Agilaire E-DAS Ambient software can automatically calculate the Air Quality Index (AQI) for the five major air pollutants regulated by the Clean Air Act: ground-level ozone (O_3), particle pollution or particulate matter ($PM_{2.5}$ and PM_{10}), carbon monoxide (CO), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2). Three types of AQI reports can be generated, as described below.

Standard Reports

The Standard report calculates the highest AQI value in the last 24 hours. Each average can be a 1-hour, an 8-hour, or a 24-hour average. Ozone is reported as an 8-hour average. The average can be configured as rolling or block, but AQIs are typically based on rolling averages. Either type of average can be calculated forward or backward from the selected hour. For example, if an 8-hour rolling average for hour 15 is configured as forward, the average will be calculated for hours 15 through 22. If configured as backward, the average will be calculated for hours 08 through 15. The rolling average is calculated by dividing the total of valid data values from the last 24 hours of averages by the number of valid data hours during the last 24 hours.

Current Reports

The Current report calculates the AQI the same way as the Standard report except the current hour is included in the first average. The Current report can all so be calculated as a forward or backward, rolling or block average. The average is calculated based on the valid data values and the number of valid data hours during the last 24-hour period.

Range Reports

The Range report is calculated the same way as the Standard report except the AQI is the highest average for valid data values for valid data hours since midnight. The Agilaire E-DAS Ambient software allows users to configure start and end hours, but the preferred method is to begin with midnight and end at the current hour.

Additional Information

Agilaire E-DAS Ambient users do not need to configure a rolling average channel for AQI calculations. The Agilaire E-DAS Ambient software requires little configuration and generates reports according to EPA's formula for calculating AQI. Default values are provided in the software for breakpoints, concentration levels, and AQI subindex values according to current EPA regulations. The default concentration levels are always in the units used by the EPA (ppm for O_3, SO_2, CO, and NO_2, and $\mu g/m^3$ for particulate matter).

For more information about AQI reporting with Agilaire E-DAS Ambient software see the *Agilaire E-DAS Ambient Users Manual*. For information about AQI, pollutants and how they affect your health, resources, and local AQI air quality see http://www.airnow.gov/.