



PM2200 Personal AirTest Monitor

Know Your Indoor Environmental Quality

The Personal AirTest Monitor (PM2200) is an affordable, air quality indicator that provides the functionality of a desktop clock and calendar with a continuous indication of three of the most important indicators of indoor environmental quality: carbon dioxide, humidity and temperature. If desired, the monitor can provide an audible alert if concentrations are beyond acceptable limits. The large LCD display will also interpret the indoor carbon dioxide readings and indicate if ventilation rates are “good”, “normal” or “poor”. The Personal AirTest Monitor requires no maintenance or calibration and uses advanced sensor technology previously only available in professional air quality diagnostic equipment.

Carbon Dioxide

Carbon dioxide (CO₂) levels can indicate the amount of fresh air ventilation being provided to a space. Higher levels mean less fresh air and greater chance of pollutant buildup.

What is it?

People breathe in oxygen and breathe out CO₂. Most combustion devices also produce large amounts of CO₂. The lowest levels of CO₂ is found in fresh outside air at 400 to 500 ppm (parts-per-million).

What does it mean?

In indoor spaces, if CO₂ levels build up it is usually due to lack of ventilation. Since ventilation is the primary method of controlling pollutants indoors, increased concentrations of CO₂ are an indicator that other gases and contaminants may also be building up. New “Green” and “Smart” buildings now use CO₂ sensors to measure and control ventilation.

Most existing buildings do not yet measure or use CO₂ for control.

Humidity

The relative humidity of air indicates the amount of moisture in the air. Moisture levels that are too high or too low can create conditions for mold and bacteria to thrive.

What is it?

Relative humidity is the amount of moisture that air can hold at a given temperature. As levels approach 100% RH, moisture will condense out of air.

What does it mean?

Extended periods of humidity over 60% RH indoors can create conditions favorable to mold and mildew growth that can affect allergies and general health. Very high levels of humidity can lead to condensation on cold surfaces that can cause staining, potential structural damage and accelerated mold growth. Ideally levels in indoor environments should be between 40%RH and 60% RH.

Temperature

The temperature of air can be an important indicator of comfort. Humidity levels and the potential for mold growth is also significantly affected by temperature.

What is it?

The Personal AirTest monitor can display temperatures in °F or °C. Check your space to ensure it is at the temperature you like. Check how your space temperature compares to the setting on the thermostat.

What does it mean?

We all know the temperature affects comfort. It also affects humidity. For every 1°F decrease in temperature there is approximately a 2% increase in humidity. If surfaces in a space gets too cool it can lead to conditions that encourage the growth of certain molds and bacteria.

Key Features of The PM2200

The AirTest Personal Monitor provides an instant and ongoing indication of the most commonly used indoor environmental quality parameters. Key features include:

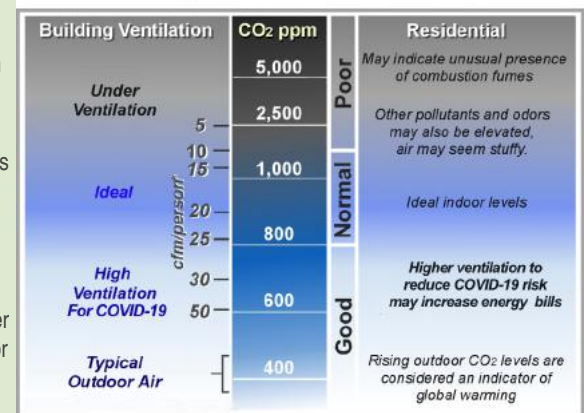
- Displays year and date with clock function and alarm.
- Displays carbon dioxide concentrations (CO₂) in parts per million (ppm) with "Good", "Normal" and "Poor" indicator. High level alarm at 5,000 ppm.
- Self-calibrating CO₂ sensor will never need maintenance.
- Displays percentage relative humidity (%RH), droplet image indicates levels over 60% RH, Low indication under 30% RH.
- Displays temperature in °C or °F.
- One year warranty covers defects in parts and workmanship.



Understanding CO₂

- People breath in oxygen and breath out CO₂. Combustion devices also produce large amounts of CO₂.
- Outside CO₂ levels are very low in the range of 400-500 ppm. Concentrations in this range in indoor air, generally indicate the presence of large amounts of fresh air.
- Indoor CO₂ concentrations are a dynamic indication of the number of people in the space (producing CO₂) and the amount of low concentration CO₂ being introduced for ventilation. As a result, peak CO₂ concentrations can be used to determine the outdoor ventilation rate in terms of the cubic feet-per-minute (cfm) of outside air per person. Most buildings and codes target 15 cfm per person as a level that will minimize complaints. This is equal to about 1,100 ppm CO₂.
- Elevated levels of CO₂ generally indicate a lack of ventilation, that can also allow various other indoor pollutants to build up. Symptoms often attributed to CO₂ are headaches, drowsiness or lethargy, are not due to CO₂ but are a result of exposure to other irritants and pollutants that build up with the CO₂ when ventilation rates are low.
- Carbon dioxide should not be confused with carbon monoxide (CO) a deadly gas given off by combustion appliances. Carbon dioxide is also given off by combustion devices but is much less harmful. If CO₂ levels exceed 5,000 ppm and keep rising in an indoor space it can indicate the unusual presence of combustion fumes that may contain CO and other harmful gases. Ventilate the space and have a professional investigate immediately.

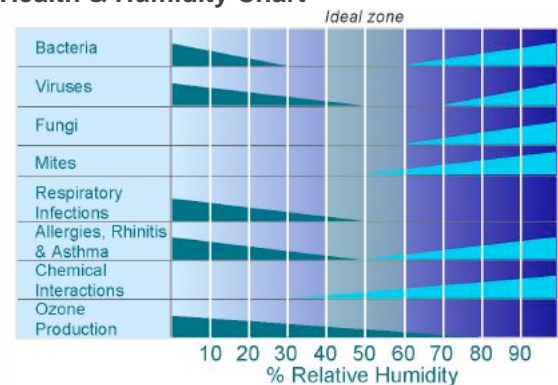
Understanding Indoor CO₂ Levels



Understanding Humidity

- Humidity is a major comfort parameter, that indicates the amount of moisture that air can hold at a particular temperature. At 100% RH the air contains so much moisture that it will turn from a liquid to vapor and form condensation. This condensation can stain building components and potentially be a source of nourishment for the growth of mold.
- As shown on the graph on the right, adverse health effects, and organisms that may threaten health tend to thrive in conditions of low and high humidity. For the chart on the left, the thicker the triangle shaped bar the greater the effect. Ideally conditions should be maintained in the ideal range shown on the chart.
- Humidity is directly affected by temperature. As air cools it can hold less moisture. As a result, what may appear to be acceptable humidity at one temperature may be much higher at a lower temperature. This is one reason basements often feel damp. Watch out for cold surfaces in a building that may cool air to the point where water condenses out of the air.

Health & Humidity Chart



Source: ASHRAE Transactions 1985 V.91 P.1

PM2200 Specifications:

CO₂ Sensor

Type: NDIR w/ self calibration

Sample Method: Diffusion

Range: 0-10,000 ppm

Accuracy: ±50 ppm + 5% of measured value

Humidity Sensor

Type: Resistive

Sample Method: Diffusion

Range: 0-100% RH

Accuracy: ±3% RH

Temperature Sensor

Type: Thermistor

Range: 4 to 120°F

(-20 to 50°C)

Accuracy: ±0.9°F (0.5°C)

General

Power: 110V Plug-in adaptor

Input To Monitor: 5VDC, 1A

Warranty: 1 year, for defects in parts of workmanship



AirTest™ Technologies Inc. specializes in the application of cost effective, state-of-the-art air monitoring technology to ensure the comfort, security, health and energy efficiency of buildings.