

Carbon Dioxide (CO₂)

CD-6H Carbon Dioxide Detector, Controller and Transducer



CD-6H Carbon Dioxide Detector, Controller and Transducer

- Low voltage
- Dual relay Carbon Dioxide (CO₂) detector, controller and transducer
- Selectable 4-20 mA output, buzzer and digital display options
- It is an electronic detection system used to measure the concentration of Carbon Dioxide and provide feedback and automatic ventilation control to help reduce CO₂ concentrations in conference rooms, classrooms, meeting halls or similar applications
- Low level meter capable of displaying from 0-5000 ppm (parts per million) of Carbon dioxide
- Factory calibrated and 100% tested for proper operation
- Automated background calibration program to set the clean air level on a regular basis

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- Outdoor "fresh" air ventilation is important as it can dilute CO₂ the indoor environment. The amount of fresh air that should be supplied to a room depends on the type of facility and room
- Ventilation should keep carbon dioxide concentrations below 1000 ppm and create indoor air quality conditions that are acceptable to most individuals
- The CD-6H uses an automated background calibration program to set the clean air level on a regular basis
- The CD-6H will maintain accuracy it is exposed to the "clean air reference value" (this reference value is the lowest concentration to which the sensor is exposed) at least three times in the span of 14 days
- Note: This applies when used in typical indoor ambient air

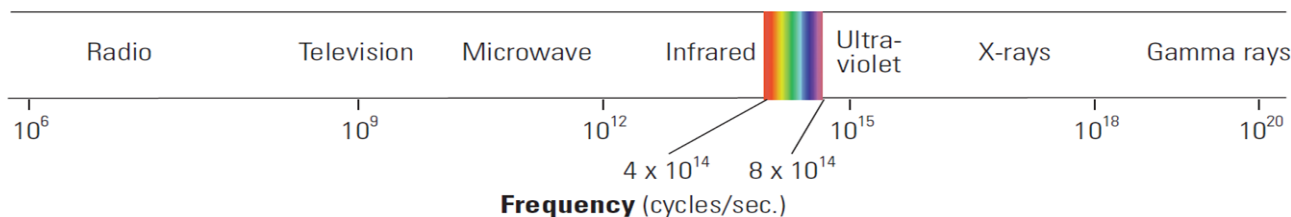


CD-6H Carbon Dioxide Detector, Controller and Transducer

- The CD-6H provides CO₂ detection and automatic ventilation control for conference rooms, classrooms, meeting halls or similar applications
- Carbon dioxide is a colorless, odorless gas that is produced both by people exhaling CO₂ as well the burning of gasoline, coal, oil and wood
- The outdoor concentration of carbon dioxide can vary from 350-400 parts per million (ppm) or higher in areas with vehicle high traffic or industrial activity
- The indoor CO₂ level depends upon the number of people present, how long an area has been occupied, the amount of outdoor fresh air entering the area and other factors
- Carbon dioxide concentrations indoors can vary from several hundred parts per million to over 1000 ppm in areas with many people present for an extended period and where fresh air ventilation is limited

Product Research - NDIR Sensor

- NDIR (Non-Dispersive Infrared) sensors are simple spectroscopic devices often used for gas analysis
- The key components of an NDIR sensor are an infrared source (lamp), a sample chamber or light tube, a wavelength filter, and an infrared detector
- The gas diffuses into the sample chamber and gas concentration is measured electro-optically by its absorption of a specific wavelength.
- Gases whose molecules consist of two or more dissimilar atoms absorb infrared radiation in a unique manner, making infrared sensors are highly selective.



Location of Infrared in the Electromagnetic Spectrum

Product Research - NDIR Sensor

- Poisoning
 - This is the main problem with catalytic sensors. Various chemical compounds, such as hydrogen sulfide, silicon compounds, and chlorinated or fluorinated compounds, among others, can poison the catalyst in the sensor and cause the sensor to lose sensitivity. IR detectors do not suffer from this problem
- Burn Out
 - Catalytic sensors will burn out if exposed to high gas concentrations. Again, IR detectors do not have this problem
- Life Expectancy
 - Catalytic sensors have a life expectancy of about 1-5 years, while solid-state sensors typically last more than 10 years. A well-designed IR unit also has a life expectancy of more than 10 years

Product Research - NDIR Sensor

- Calibration
 - Periodic calibration must be done on all sensor types. However, on IR units, as long as the zero is maintained, the IR unit is assured a good response and good span accuracy. Because of this characteristic, abnormal functioning of an IR unit can be easily determined
- Continuous Exposure to Gas
 - Catalytic and solid-state sensors will have a shortened life span because continuous exposure to gas ultimately changes the characteristic of the sensor and leads to permanent damage. An IR instrument's functional components are protected by the optical parts, which are basically inert to most chemicals. Only the IR radiation interacts with the gas; so, as long as gas samples are dry and noncorrosive, IR instruments can monitor a gas continuously

Product Research - NDIR Sensor

- Common gases that can be detected by this sensor:
 - **Alkanes** - methane, ethane, propane, butane, pentane, hexane, etc.
 - **Alkenes** - ethylene, propylene, butene, pentene, hexene, etc.
 - **Aromatics** such as benzene, toluene and xylene
 - **Alcohols** such as methanol, ethanol, propanol and allyl alcohol.
 - **Ethers** - dimethyl ether, ethyl ether, n-propyl ether, methylvinyl ether, ethylene oxide, tetrahydrofuran, furan and 1,4-dioxane.
 - **Ketones** such as acetone, methyl ethyl ketone and heptanone.
 - **Carbon Dioxide, Refrigerants and Ammonia**



Gas Detection. It's What We Do.