



Automation Components, Inc.  
*Gas Detection*

# Indoor Climate Control

*CO2 monitoring for greenhouses & indoor agriculture*

Carbon Dioxide is a necessity to all forms of life. It is a vital parameter in the production of all kinds of plant species, bacteria, chicken etc. A natural application for aSENSE-GH is therefore to supervise and/or control the climate in e. g. greenhouses, mushroom farms, agricultural, horticultural and medical incubators based on CO2 concentration and temperature. SenseAir model aSENSE-GH is especially suited for installation in these and similar environments since it measures both temperature & carbon dioxide concentration in one single unit. Both are very important parameters when trying to achieve an optimum growth. The two-in-one function reduces the installation cost by minimizing the total number of boxes and wirings needed!

**Automation Components, Inc. (ACI)** is ready to assist you with gas detection requirements. Visit ACI's website, [workaci.com](http://workaci.com) or call **1-888-967-5224** for more information.



## How They Work:

Greenhouses and other forms of Indoor Agriculture create a sheltered environment for plants / vegetation by trapping heat. Heat enters the controlled area through its covering of glass or plastic and starts to warm soil and plants inside. Warm air near the soil begins to rise and is immediately replaced with cooler surrounding air that starts to heat up. Temperature rises inside more rapidly than the air outside, creating a controlled microclimate.





# A CO<sub>2</sub> Climate Control Solution for Indoor Agriculture

The aSENSE-GH is an all-digital, low-cost transmitter for installation in the climate zone. It measures both temperature and carbon dioxide concentration in the ambient air, transforms the data into digital output signals and sends these values to a comprehensive system. The special coated PCB and extra dust/water protection filter, makes aSENSE-GH suited for all kinds of greenhouses, mushroom farms, incubators and similar environments.

## aSENSE-GH Product Specifications

<b>Supply Voltage:</b>	24 VAC/VDC ±20%; 50/60 Hz, 10.5 to 40 VDC maximum (Half-wave rectified)
<b>Power Consumption:</b>	<3W Average
<b>Electrical Connections:</b>	0.00232 in <sup>2</sup> (1.5 mm <sup>2</sup> ) screw terminals
<b>Operating Environment:</b>	Green House applications
<b>Operating Temperature:</b>	32°F to 122°F (0°C to 50°C)
<b>Operating RH:</b>	0 to 85% RH Non-condensing
<b>Warm-Up Time:</b>	< 1 minute (@ full specs 15 minutes)
<b>Sensing Range; CO<sub>2</sub>   Temperature:</b>	0 to 2000 ppm   -4° to 140°F (-20° to 50°C)
<b>Accuracy; CO<sub>2</sub>   Temperature:</b>	±30 ppm ±3% of reading   ±1.8°F (1°C)
<b>Extended CO<sub>2</sub> Ranges:</b>	2000 to 10,000 ppm (factory set or programming cable required)
<b>Extended CO<sub>2</sub> Accuracy:</b>	Typically < (+/-30 ppm +/-20% of measured value)
<b>Annual Zero Drift:</b>	< +/-10 ppm
<b>Operating Pressure:</b>	+1.6% per 0.145 psi (1 kPa) deviation from normal pressure (1 Atmosphere = 14.7 psi (1.013 KPa))
<b>Sensing Method:</b>	Non-dispersive infrared (NDIR) with EQC (Eternal Quality Coating)
<b>Sensor Life <sup>1</sup>:</b>	> 15 years
<b>Diffusion Time (T1/e):</b>	< 3 minutes
<b>Coverage Area:</b>	7500 sq. ft maximum
<b>Mounting Height:</b>	4-6' off the floor
<b>Display:</b>	4 digits, 7 segments LCD with ppm / °F
<b>Status LED Indicators:</b>	Yellow = Maintenance Support   Red = Closed Relay
<b>Calibration:</b>	Recommended annually
<b>Outputs <sup>2</sup>:</b>	Out 1 (CO <sub>2</sub> ): 0/2-10V, 0/4-20 mA, 0-2000 ppm Out 2 (Temp): 0/2-10V, 0/4-20 mA, 32° to 122°F / 0° to 50°C Out 3 Relay: N.O.; 1A @50 VAC / 24 VDC
<b>Protection:</b>	PTC fuse (auto reset) on signal return M, short-circuit safe
<b>Output Limits:</b>	MIN & MAX limits may be individually set to all outputs Linear
<b>OUT1 &amp; OUT2:</b>	0/2-10 VDC, R <sub>OUT</sub> < 100Ω, R <sub>LOAD</sub> > 5kΩ (0/1-5 VDC optional) 0/4-20 mA, R <sub>LOAD</sub> < 500Ω
<b>D/A Resolution:</b>	10 bits, 10 mV / 0.016 mA
<b>D/A Conversion Accuracy:</b>	Voltage mode: ± 2% of reading ± 50 mV current loop : ± 2% of reading ± 0.3 mA
<b>Relay Trip Point <sup>3</sup>:</b>	1000 ppm (factory set)
<b>Relay Deadband / Hysteresis:</b>	100 ppm (factory set)
<b>Compliance:</b>	RoHS directive 2011/65/EU, EMC 2004/108/EC, 92/31/EEG including amendments by the CE-marking Directive 93/68/EEC
<b>Storage:</b>	-40° to 158°F (-40° to 70°C) Non-display, -4° to 122°F (-20 to 50°C) Display 0 to 85% RH Non-condensing
<b>Enclosure:</b>	Box; PC & ABS blend IP65 Rating, Flammability UL94V-0 Cover; Makrolon® 6555 plastic, Flammability rating UL94V-0
<b>Product Dimensions:</b>	(H) 5.95" (151.9 mm) x (W) 3.33" (84.6 mm) x (D) 1.85" (47 mm)

**Note <sup>1</sup>:** In normal Indoor Air Quality (IAQ) applications | Corrosive environments are excluded

**Note <sup>2</sup>:** Optional Modbus RS485 communication board available

**Note <sup>3</sup>:** Changes can be made using TTL-232R-3V3 cable and UIP5 software downloaded from Senseair

