

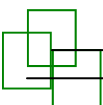


Sales Catalog

- **Economical Sensor and Control Solutions**
- **Broad Range of Analog & Network Connectivity Options**
- **Private Label Available**
- **Customizable**

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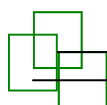
Build to suit

GreenTrol Automation, Inc. specializes in high quality standard off-the-shelf and custom designed HVAC air sensing and control solutions. The air sensing and control market is expanding rapidly as demands for improved methods of measurement and commissioning of indoor air quality and energy conservation metrics converge with more stringent green building mandates and attractive government incentives. The **GreenTrol** GreenFlow®, GreenAlert®, and GreenSens® product lines offer distributors, integrators and OEMs innovative turn-key solutions, as well as custom designed application specific instrument/control packages to meet these challenges. The GreenTrol team of solution experts has teamed up with EBTRON, Inc., a leading designer/manufacture of airflow measurement instruments and controls, providing an unparalleled resource for fast tracking your critical air sensor/control requirement from concept and development through full production.

GreenTrol provides off the shelf high performance sensors to meet a wide variety of application requirements. Devices can be integrated with sensor systems and embedded custom firmware to execute specific sequences of operation. Highly accurate airflow, temperature, relative humidity and CO₂ sensors can be integrated into a complete, custom turn-key package for seamless integration with your product. GreenTrol design engineers are experienced with BACnet®, Modbus® and Lon communication protocols as well as with traditional analog I/O interfaces. Proprietary protocols can also be designed into your custom solution. Speak with a GreenTrol applications engineer today and explore the exciting opportunities available to enhance your product line using state of the art GreenTrol sensor and control technology.

Custom Products

GreenTrol's experienced design team can fast-track your "idea" into a solution in less time than traditional "off-the-shelf" companies. Customization can make your product stand out from the competition.





GreenFlow **-GF Series Product Family**

The GreenFlow GF series airflow stations provides high quality economical general airflow measurement using advanced Thermal Dispersion (TD) technology for accurate, repeatable NIST traceable measurement. Models are available for airflow measurement from zero flow (still air) to 2,000 FPM and temperature measurement from -20° to 160° F [-28.9° to 71.1° C]. In addition, the GF series' flexible programmable alarm capabilities are key elements in the acquisition of LEED® credits for Energy and Atmosphere and Indoor Environmental Quality. An integral LCD display provides for local indication of measurement, device configuration and for local alarm status. Models with programmable alarm features can be configured as dry relay contacts or as a direct driver for external LED alarm indication (15mA typical). An advanced variable airflow signal filter integration filter can be engaged to minimize airflow fluctuations at low air flows (e.g. resulting from transient wind gusts when installed near intake louvers). Finally, an innovative Field Calibration Wizard can be engaged to ensure simple, intuitive adjustment to factory calibration where required.

The **GF-2000** series accepts 1 or 2 airflow probes and provides 2 analog outputs and additional programmable PID capabilities, while the **GF-1000** series accepts a single airflow probe and provides a single simple analog output interface. All GreenFlow products are backed by a 12 month limited warranty.



GF-2200-A



GF-2100-A

GF-2000 Series

The GF-2000 Series includes two separate outputs for airflow and temperature, or for measurement of two separate air streams on models equipped with two probes. The GF-2000 Series includes built-in PID options and tunable PID algorithms for 0-10VDC, 0-5VDC or 2-10VDC control of external devices such as VFDs, Damper Actuators or similar devices. The two-probe GF-2200 provides an additional airflow traverse point in single air stream applications, or can be used for measurement of two separate air streams - ideal for continuous OA/EX flow monitoring and maintenance of balance and efficiency in Energy Recovery Ventilators. GF-2000 series probes include versatile universal brackets designed for a wide range of equipment applications.

GF-2200-A Universal Airflow/Temperature Measurement/Alarm/PID Control Solution

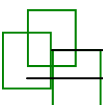
Model GF-2200-A includes two airflow/temperature probes and a GF-2000 transmitter with dual selectable analog/PID control signal output options:

- Flow/Flow: Probe 1 Airflow Rate Output / Probe 2 Airflow Rate Output
- Flow/Temp: Probe 1+2 Avg. Airflow Rate Output / Probe 1+2 Avg. Temperature
- Flow/PID: Probe 1+2 Avg. Airflow Rate Output / Corresponding PID Signal Output
- PID/PID: PID 1 Output for Probe 1 flow / PID 2 Output for Probe 2 flow
- LCD Display of Airflow, Temperature and Alarm Status
- Alarm N.O. or N.C. Relay Contacts or Direct LED Drive (15mA typical) and LCD indication
- Powerful variable airflow signal integration to minimize airflow fluctuations at low air flows
- Innovative Field Calibration Wizard
- 10ft cable (other cable lengths available up to 50 feet)

GF-2100-A Universal Airflow/Temperature Measurement/Alarm/PID Control Solution

Model GF-2100-A includes a single airflow/temperature probe and a GF-2000 transmitter with dual selectable analog/PID control signal output options:

- Flow/Temp: Airflow Rate Output / Airflow Temperature Output
- Flow/PID: Airflow Rate Output / PID Signal Output
- LCD Display of Airflow, Temperature and Alarm Status
- Alarm N.O. or N.C. Relay Contacts or Direct LED Drive (15mA typical) and LCD indication
- Powerful variable airflow signal integration to minimize airflow fluctuations at low air flows
- Innovative Field Calibration Wizard
- 10ft cable (other cable lengths available up to 50 feet)



**GF-1200-A**

GF-1000 Series

The GF-1000 Series includes a single thermal dispersion airflow probe and a GF-1000 transmitter with single analog output. Airflow probe calibrated accuracy is 3% typical (4% maximum) with sensor accuracy of 2% of reading.

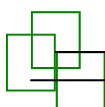
For airflow measurement, the GF-1200-A with airflow sensor probe is well suited for a wide range of applications in ducts from 4 to 16 inches, and is ideal for small ducted outside airflow measurement applications. An insertion mounting bracket on the airflow probe provides for simple field installation.

The GF-1000 Series analog output is configurable for 0-10VDC, 0-5VDC or 2-10VDC (20 mA maximum) for communication with virtually all modern building automation systems (BAS). A programmable alarm feature can be configured as dry relay contacts or as a direct driver for external LED alarm indication (15mA typical). The airflow measurement model GF-1200-A includes an advanced variable airflow signal filter integration feature to minimize airflow fluctuations at low air flows (e.g. resulting from transient wind gusts when installed near intake louvers). The GF-1200-A also includes an innovative Field Calibration Wizard for simple, intuitive adjustment to factory calibration where required.

GF-1200-A Universal Airflow/Temperature Measurement/Alarm Solution

Model GF-1200-A includes a single two sensor GF-1200 series airflow measurement probe available from 4 to 16-inches (single sensor on 4 inch probe) and a GF-1000 transmitter with a single analog output:

- Airflow sensor accuracy of 3% typical (4% maximum)
- Analog Airflow Output 0-10VDC, 0-5VDC or 2-10 VDC (20 mA max.)
- LCD Display of Airflow, Temperature and Alarm Status
- Alarm N.O. or N.C. Relay Contacts or Direct LED Drive (15mA typical) and LCD indication
- Powerful variable airflow signal integration to minimize airflow fluctuations at low air flows
- Innovative Field Calibration Wizard
- 3 ft cable (other cable lengths available up to 50 feet)





GreenAlert **-GA Series Product Family**

The GreenAlert family of general purpose alarms is an excellent choice for applications requiring a general purpose local visual alarm and remote alarm notification capabilities. These innovative products are also ideal for retrofitting existing applications not equipped with alarm features. Install GreenAlert devices for control systems that require alarm capability outside of a Building Automation System (BAS), or for LEED® designs meeting the Outside Air Delivery Credit (EQC1) alarm requirements. GreenAlert devices monitor the analog output of another device and generate local visual and remote alarm indications when preset limits are exceeded. GreenAlert products are available with simple fixed alarm thresholds or with fully programmable alarms for Low/High Limit with hysteresis, or for dead band operation with upper/lower set points based on setpoint percentage. GreenAlert devices are backed by a 12 month limited warranty.



GA-200



GA-100



GA-50

GA-200 Advanced Programmable Alarm Solution

The GA-200 is an advanced, fully programmable alarm device with LCD display. The GA-200 features selectable alarm type (Hi limit, Lo limit or Deadband with hysteresis), adjustable alarm set point and hysteresis and an advanced variable signal integration filter to minimize false triggering due to transient analog signal fluctuations that is particularly useful in outside airflow applications affected by transient wind gusts. The GA-200 supports analog signals of 0-5VDC, 0-10VDC, 2-10VDC and 4-20mA. Local alarm notification, remote alarm relay contacts (N.O. or N.C.) and external alarm LED drive are all available from the GA-200.

Alarm Type: Local visual and remote alarm notification via dry relay contacts (N.O. or N.C., 30VDC/24VAC 3 Amps max) or direct LED drive (15mA typical)

Alarm Input Range/Threshold: 0-5V, 0-10V, 2-10V or 4-20mA with programmable threshold.

Communication Options: BACnet® Modbus MS/TP

GA-100 General Purpose Alarm Solution

The GA-100 is a general purpose alarm device with fixed threshold, local visual alarm and an integral relay for remote notification via dry relay contacts or direct drive to an external LED alarm. The GA-100 continuously monitors the analog output of another device and activates the alarm if the threshold value is exceeded. An LED provides local indication of the alarm and remote notification is provided by built-in relay or by direct LED drive.

Alarm Type: Local visual and remote alarm notification via dry relay contact closure (30VDC/24VAC 3 Amps max) or direct LED drive (15mA typical)

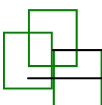
Alarm Input Range/Threshold: 0-5V, 0-10V or 4-20mA with fixed 3.0VDC/6.0mA threshold.

GA-50 Alarm/Alert Indicator Solution

The GA-50 alarm device includes a red LED alarm indicator housed in a durable UL94-5VA enclosure. The GA-50 is a quick and inexpensive alarm solution which can be directly interfaced to the LED driver alarm output on GreenTrol's GF-2000 series flow stations.

Alarm Type: LED; Local visual alarm notification

Alarm Input Range/Threshold: 0-5VDC;(15mA typical)





GreenSens -GS Series Product Family

The GreenSens family of IAQ sensors support measurements for CO₂, Relative Humidity (RH) and Temperature. GreenSens IAQ sensor products are key in the acquisition of LEED® credits and as well as for true demand controlled ventilation in compliance with the Ventilation Rate Procedure (VRP) of ASHRAE® Standard 62.1-2007. GreenSens IAQ sensors support BACnet and Modbus RTU communication protocols. Our CO₂ sensors use a patented continuous self calibration feature that virtually eliminates routine maintenance. GreenSens IAQ sensors are microprocessor-based devices with industrial grade integrated circuits to ensure exceptional accuracy, stability and long term reliability. All devices require 24VAC/50-60Hz power and are available in standard low profile wall mount enclosures. All GreenSens products are backed by a 12 month limited warranty.

Three standard models are available in the GreenSens family of IAQ Sensors:

- **GS-300-N Combination CO₂/RH/Temperature Sensor**
- **GS-200-N Combination RH/Temperature Sensor**
- **GS-100-N CO₂ Sensor**



GS-300-N/CO2/RH/T



GS-200-N/RH/T



GS-100-N/CO2

GS-300-N/CO2/RH/T:

Triple CO₂/Relative Humidity/Temperature sensors with integral BACnet and Modbus communication interface.

CO₂ sensor accuracy: ± 75 ppm @ 1000 ppm, 77° F (25° C)
Relative Humidity sensor accuracy: $\pm 2\%$ @ 20-80% RH, 77° F (25° C)
Temperature sensor accuracy: $\pm 1.08^\circ$ F @ 77° F ($\pm 0.6^\circ$ C at 25° C)

GS-200-N/RH/T:

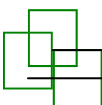
Combination Relative Humidity/Temperature sensors with integral BACnet and Modbus communication interface.

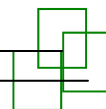
Relative Humidity sensor accuracy: $\pm 2\%$ @ 20-80% RH, 77° F (25° C)
Temperature sensor accuracy: $\pm 1.08^\circ$ F @ 77° F ($\pm 0.6^\circ$ C at 25° C)

GS-100-N/CO2:

Single CO₂ sensor and integral BACnet and Modbus communication interface.

CO₂ sensor accuracy: ± 75 ppm @ 1000 ppm, 77° F (25° C)







GreenTrol[®]
Automation, Inc.

