

Economizer Minimum Outdoor Airflow Controller Module for Economizer Controllers with Analog Proportional Actuators



- √ Compensate for damper hysteresis, filter loading, wind, stack and fan speed variations
- √ Provide continuous verification of intake flow rates
- √ Demonstrate compliance with ASHRAE Standards 62.1, 90.1 and 189.1
- √ Satisfy LEED prerequisites and document code compliance
- √ Improve indoor air quality and thermal comfort
- √ Save energy
- √ Detect economizer and system faults

The EMOAC-5000 can be provided with a single integrated IAT-DI duct probe, one or two integrated IAT-UI or IAT-US universal mount probes or an approved external BACnet MS/TP airflow measurement device.

- ❑ Compatible with GreenTrol IAT integrated thermal dispersion airflow/temperature sensors or approved BACnet MS/TP airflow measuring devices
- ❑ Provide airflow setpoint control, CO₂-DCV or population based-DCV during MOA mode
- ❑ Accepts approved BACnet MS/TP CO₂ sensors or occupancy counters when DCV is required
- ❑ **Accepts an analog CO₂ sensor when actuator fault/feedback is not required**
- ❑ Clamp DCV airflow rates between minimum and maximum airflow limits
- ❑ Supports unoccupied airflow setpoint control
- ❑ Built-in notification alarms
- ❑ Contact closure relay can be assigned to notification alarms or active control mode

The EMOAC-5000 interfaces with approved MS/TP BACnet CO₂ sensors and occupancy counters when DCV is required. It can be used with an analog CO₂ sensor if an actuator fault/feedback signal is not required.

The EMOAC-5000 modulates the control signal to a proportional analog outdoor/return air damper actuator to maintain the minimum ventilation rate required whenever the economizer controller (by others) is in minimum outdoor air mode. The controller can be configured to maintain an unoccupied outdoor airflow setpoint to provide unoccupied pressurization.

Advanced logic and airflow measurement improves traditional CO₂-DCV when demand control ventilation is required. The EMOAC-5000 controller resets the outdoor airflow setpoint between user defined minimum and maximum airflow limits to maintain either a user defined fixed CO₂ level or variable airflow setpoint based on the population using a built-in CO₂/airflow counting algorithm or external occupancy counter.

The EMOAC-5000 interfaces with most MS/TP BACnet building automation systems and supports full read/write privileges as a BACnet 1/8 load master. An RS-485 signal isolator is available

EMOAC-5000 Technical Specifications

Functionality

Minimum Outdoor Air Control (MOAC) Modes Supported

- FLOW:** Maintains a user defined airflow setpoint
- CO2:** Maintains a user defined CO₂ level by resetting the outdoor airflow setpoint (requires a CO₂ sensor)
- CO2/OAF:** Maintains a calculated outdoor airflow setpoint based on the estimated ventilation zone population (requires a CO₂ sensor)
- COUNT:** Maintains a calculated outdoor airflow setpoint based on the occupancy counter population (requires an occupancy counter)
- FIXED:** Maintains a fixed damper position (no control)
- PASS:** Passes the economizer controller output signal (no control)

Unoccupied Air Control (UAC) Mode Option: Yes, maintains a user defined airflow setpoint

Economizer Controller Fault Signal Output: Yes (ECO FAULT=ON)
Note: If an economizer controller fault signal is required, an actuator feedback signal must be connected to AI2 and an analog input for a CO₂ sensor is not available. Use an approved BACnet MS/TP sensor if CO₂ measurement is required.

Notification Alarms

- "Unoccupied Mode" High/Low Airflow Alarm
- "Minimum Outdoor Airflow Mode" High/Low Airflow Alarm
- "All Modes" CO₂ Alarm (requires a CO₂ sensor)
- "All Modes" System Trouble Alarm

Note: Alarms can be assigned to the contact closure relay

User Interface

- Display:** 16-character alpha-numeric LCD
- Navigation:** 4-button interface

Integrated Sensor Capability

Type: Accepts GreenTrol IAT-DI, IAT-UI and IAT-US Thermal Dispersion Airflow and Temperature Measurement Probe (required unless an external MS/TP airflow measurement device is provided). See appropriate IAT product data sheet for probe information.

Available Configurations: IAT-DI Probes

Single Probe: 1 probe x 1 or 2 sensor nodes/probe

Available Configurations: IAT-UI and IAT-US Probes

- Single Probe:** 1 probe x 1 sensor node/probe
- Dual Probe:** 2 probes x 1 sensor node/probe

General Purpose Inputs

GP1

- Type:** Analog Input (AI1)
- Assignment:** Economizer controller actuator output signal
- Configurable Ranges:** 0-5V, 0-10V, 2-10V, or 4-20mA

GP2

- Type:** Analog Input (AI2)
- Assignment:** Actuator feedback signal or analog output CO₂ sensor
- Configurable Ranges:** 0-5V, 0-10V, 2-10V, or 4-20mA

Analog Outputs

A01

- Assignment:** Economizer actuator control signal
- Configurable Ranges:** 0-5V, 0-10V, 2-10V, or 4-20mA
- Maximum Number of Actuators Supported:**
 - 0-5V, 0-10V or 2-10 V: Unlimited
 - 4-20mA: 2

A02

- Assignment:** Economizer controller fault feedback signal
- Configurable Ranges:** 0-5V, 0-10V or 2-10V

Contact Closure Relay

R1

- Type:** Dry contact w/ onboard jumper to drive a remote LED
- Assignment:** EMOAC alarms or Control Mode
- Status:** Normally Open (N.O.)
- Rating:** 30 VDC or 24 VAC @ 3 amp. max.

Network Connection

N1

- Type:** Non-isolated MS/TP BACnet master connection (provide an RS-485 network isolator if isolation is required)
- B.A.S. Object Read/Write Access:** Yes
- Device Load:** 1/8 load
- Supported Baud Rates:** 9.6, 19.2, 38.4 and 76.8 kbaud
- MS/TP BACnet Airflow Sensor Capability:** One GreenTrol Automation or approved third-party airflow measurement device (cannot be used if an integrated airflow measurement device is connected).
- MS/TP BACnet CO₂ Sensor Capability:** One GreenTrol Automation or approved third-party space mounted or return air CO₂ sensor
- MS/TP BACnet Occupancy Counter Capability:** One to four GreenTrol Automation or approved third-party occupancy counters

Environmental Limits, Power Requirements & Dimensions

Environmental Limits

- Temperature:** -20 to 120 °F [-28.9 to 48.9 °C]
- Humidity:** 5 to 95%

Important: Provide a weather-proof enclosure if the controller module is mounted outdoors

- Power Requirement:** 24 VAC (22.8 to 26.4 under load) @8.5V-A
- Dimensions:** 4.72H x 7.29W x 1.36D in. [119.9 x 185.2 x 34.5 mm]