

One of the challenges that HVAC design engineers face is developing an air conditioning distribution system to deliver outdoor air to the occupants of a building. This task involves determining whether the outdoor air is acceptable for a free cooling system, and then developing an air intake and mixing control system that will deliver the needed amount of outdoor air to the building at an acceptable cost.

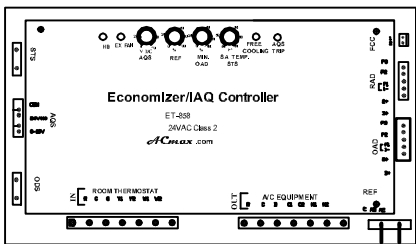
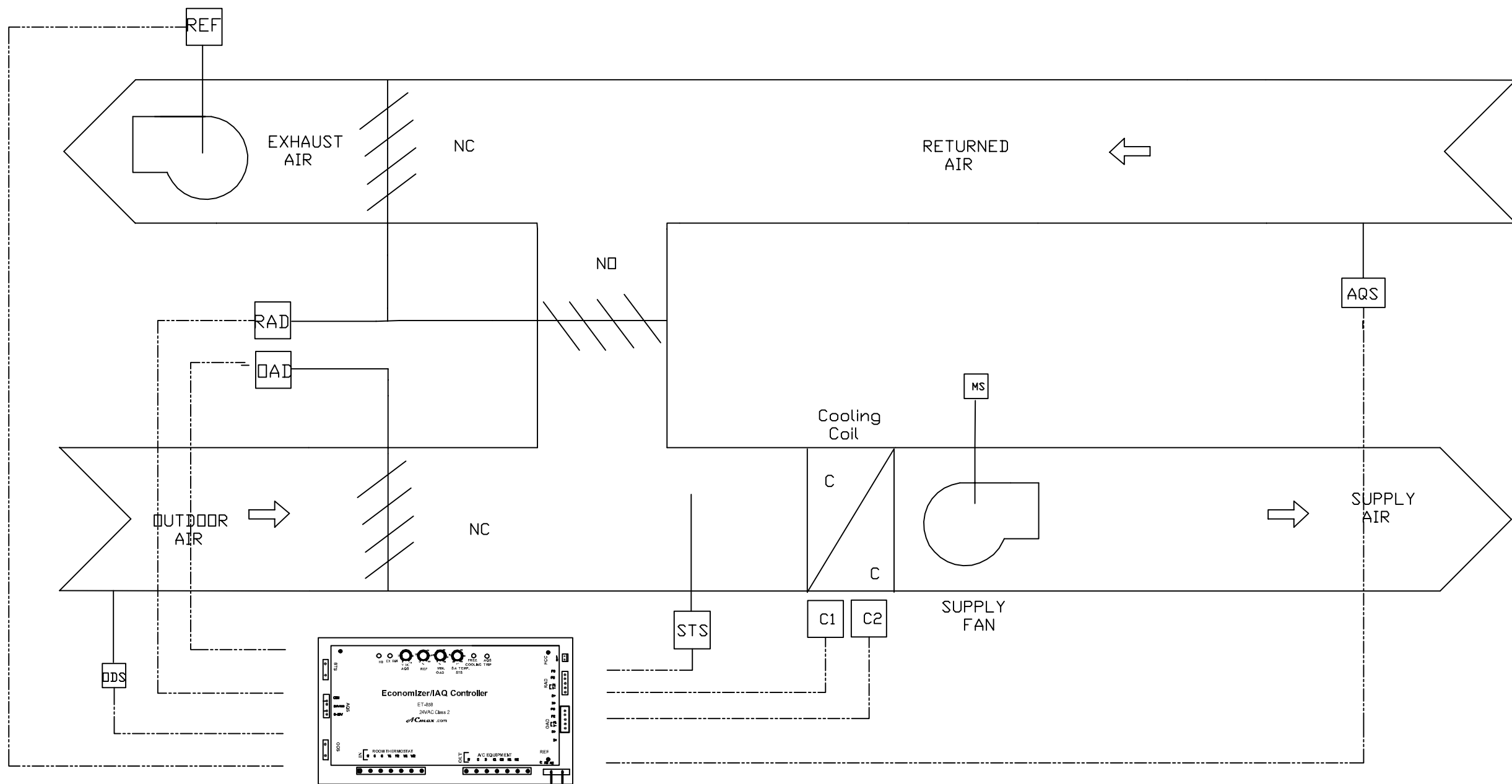
This challenge can easily be met with the **Economizer Controller ET-858**. This controller allows a cooling air handler to supply outdoor air instead of re-circulated air in order to reduce or eliminate the need for a mechanical cooling system during mild or cold weather. If the outdoor air is below a high enthalpy (humidity and temperature) limit, typically 28 BTU/lb or 75°F db, the controller will lock-out the compressor (mechanical cooling) and modulate the return and outdoor air dampers to maintain the cooling set point. When the outdoor air enthalpy exceeds the high limit set point, the outdoor air damper moves to the set minimum position for ventilation.

ET-858 can also control the amount of fresh air needed for ventilation by means of an analog signal from an indoor air quality sensor. This is to meet the Demand Control Ventilation (DCV) requirement. The indoor air quality sensor (typically CO<sub>2</sub> sensor) determines the demand for fresh air based on the occupancy of the building by measuring the amount of CO<sub>2</sub> (unlike a fixed rate of fresh air for maximum occupancy). The ET-858 meets the requirements of AINSI/ASHRAE/IESNA Standard 90.1-2001, "Energy Standard for Buildings Except Low-Rise Buildings". More details on DCV can be found at the Learning Centre at [www.acmax.com](http://www.acmax.com).


Energy saving in DCV and improved air quality make the ET-858 attractive to HVAC design engineers and building owners, not to mention the fact that a system with such a controller usually pays for itself within one or two years.

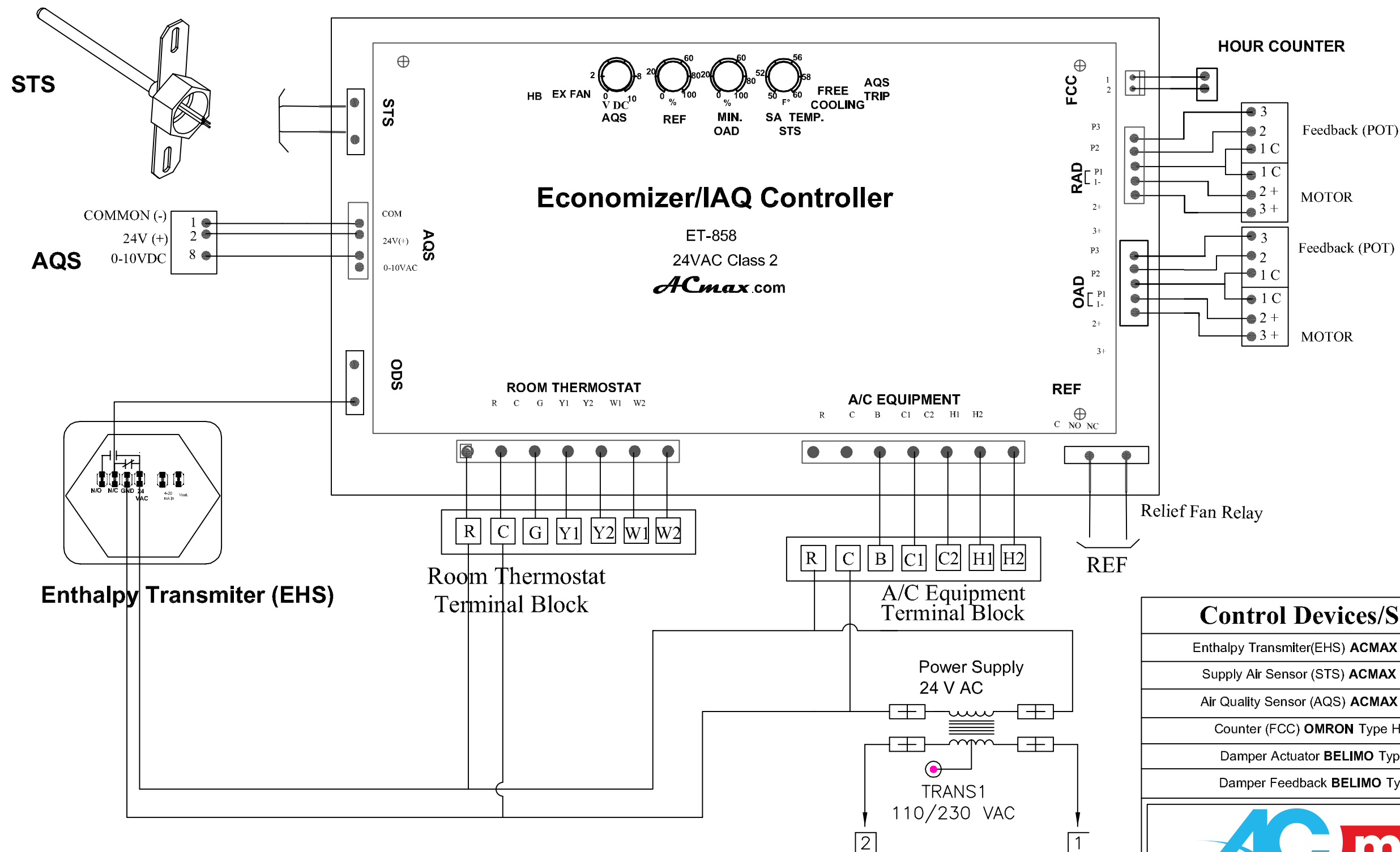
**FEATURES**

- Microprocessor-controlled for high accuracy and flexibility
- Two separate outputs for outdoor and return air damper actuators with an option to select one actuator
- Dry bulb or Enthalpy Controller input
- Indoor air quality sensor analog input
- Terminal blocks for inputs of G, Y1, Y2, W1 & W2 from thermostat and outputs B, C1, C2, H1 & H2 to the A/C equipment
- Relief exhaust fan relay output
- Free cooling hour counter output for saving energy verification
- On-board potentiometers for easy field setup and adjusting of:
  - Minimum outdoor air damper position
  - Air handling unit supply air temperature
  - Relief exhaust fan activation
  - Indoor air quality high limit
- On-board LEDs status indicators:
  - Free cooling activation
  - Relief fan operation
  - Indoor air quality high limit
  - Control operation, faults and diagnostics
- Indoor Air Quality requirement override cooling demand
- Built-in 45-second indoor fan purge delay
- Use the outdoor air as an emergency cooling stage after 30 minutes if mechanical cooling does not meet the cooling demand
- Self-configuration for the installed sensors during start up of the controller
- Mounted in snap-track for easy installation



ET-858

	
Title: <b>ECONOMIZER SYSTEM LAYOUT</b>	
Model No.: <b>ET-858</b>	Rev <b>C</b> Date: <b>28/07/2004</b> DWG No.: <b>000515-C</b>

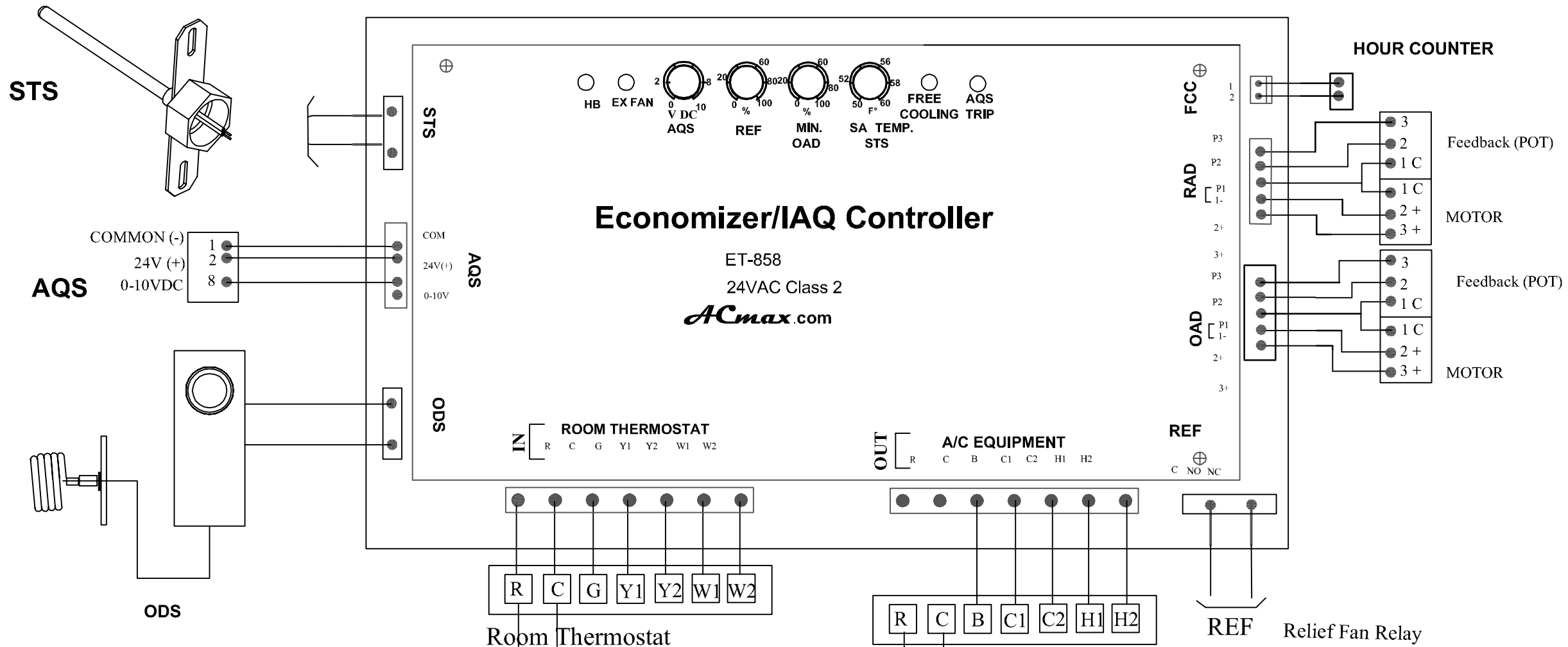


Control Devices/Sensors	
Enthalpy Transmitter(EHS)	ACMAX Type E-620E
Supply Air Sensor (STS)	ACMAX type E-624
Air Quality Sensor (AQS)	ACMAX Type E-632
Counter (FCC)	OMRON Type H7ET-N-B
Damper Actuator	BELIMO Type AM24US
Damper Feedback	BELIMO Type PA1000



Title:  
**Economizer System Connection**

Model No.:	Rev:	Date:
<b>ET-858</b>	<b>D</b>	07/28/2004
		DWG No.: 000524D



Control Devices	
Outdoor Temp Switch(ODS)	Saginomiya Type FWS-C1030YARL2
Supply Air Sensor (STS)	ACMAX type ETS-100
Air Quality Sensor (AQS)	ACMAX Type E-632
Counter (FCC)	OMRON Type H7ET-N-B
Damper Actuator	BELIMO Type AM24US
Damper Feedback	BELIMO Type PA1000



Title: Economizer System Connection

Model No.: <b>ET-858</b>	Rev: <b>E</b>	Date: 07/28/2004
		DWG No.: 000524-E



# Enthalpy Controller: Model E-620E

Relay Output: SPDT

Relay energize when Enthalpy decrease below 28 Btu/lb

