

3-25 Ton

Sunline™ series

Economizer Options/Accessories

1. Single Input Electronic Enthalpy Economizer Systems

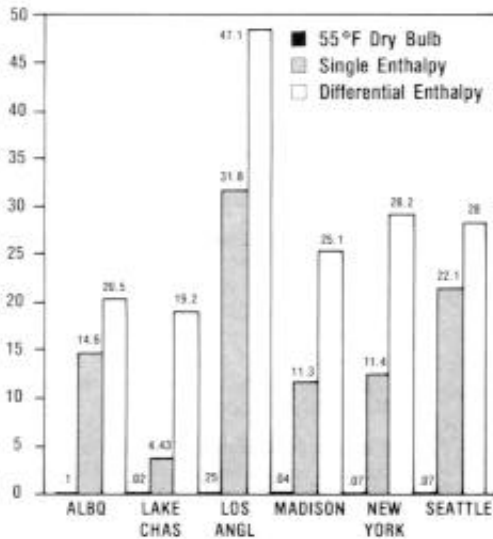
2. Dual Input (Differential) Electronic Enthalpy Economizer Systems

These economizers have been designed for use with Sunline Series rooftop units - 3 through 25 tons of cooling capacity. They represent a substantial advance in economizer technology by providing non-mechanical cooling in a more economical and dependable manner than previously had been possible.

The economizers may be factory-installed, or they can be installed in the field at any time during or after installation of the Sunline Series unit.

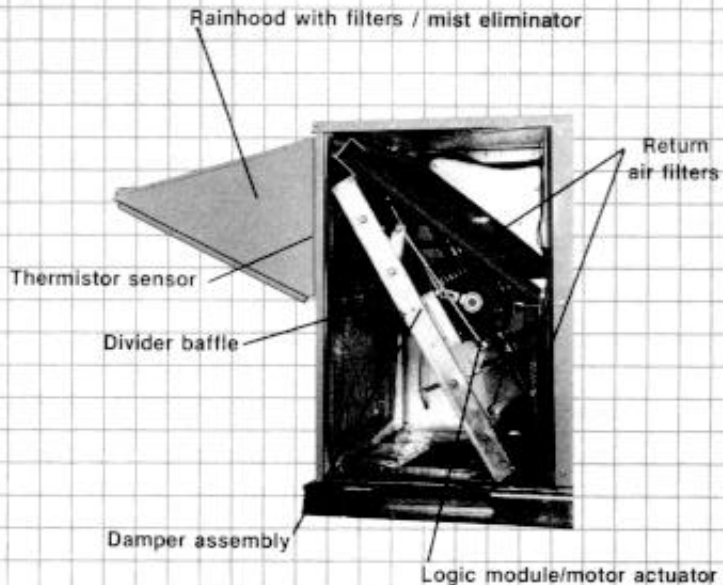
Each system consists of a slide-in, plug-in assembly with dampers that are positioned by a spring return, fully modulating damper actuator. As the outdoor air intake dampers open, the return air dampers close. Complete or partial changeover from mechanical refrigeration to economizer operation is determined by a single input electronic enthalpy control or by a dual input control. Simultaneous mechanical and economizer operation is also possible.

Included with the assembly are a rainhood, the damper assembly with spring return motor actuator, single or dual electronic enthalpy sensors, and a solid state logic module.



ENERGY SAVINGS WITH THE SUNLINE 2000 ECONOMIZER

Above bar graph shows the percentage of energy savings using a York single or dual (differential) enthalpy control economizer over a 55°F dry bulb control at various locations.



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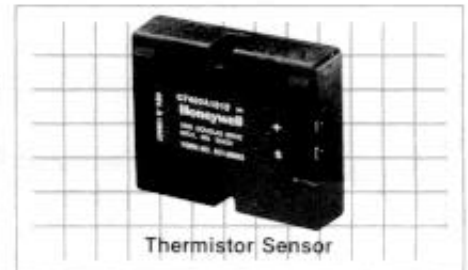
SUNLINE SERIES ECONOMIZER ELECTRONIC COMPONENTS AND OPERATION

Solid State Enthalpy Sensor

The thermistor type sensor combines the temperature and humidity sensing of outdoor or return air, and transmits this information to the economizer's logic module. This type of sensor is superior to dry bulb and nylon ribbon type sensors in both long term accuracy and reliability.

In a single enthalpy system the sensor is installed inside of the unit's outdoor air intake hood. In dual (differential) enthalpy systems, one sensor is installed inside of the outdoor air intake hood, and one in the return air section of the Sunline Series unit.

The sensor is enclosed in a rugged, weatherproof corrosion-resistant glass-fibre reinforced plastic case.



Thermistor Sensor

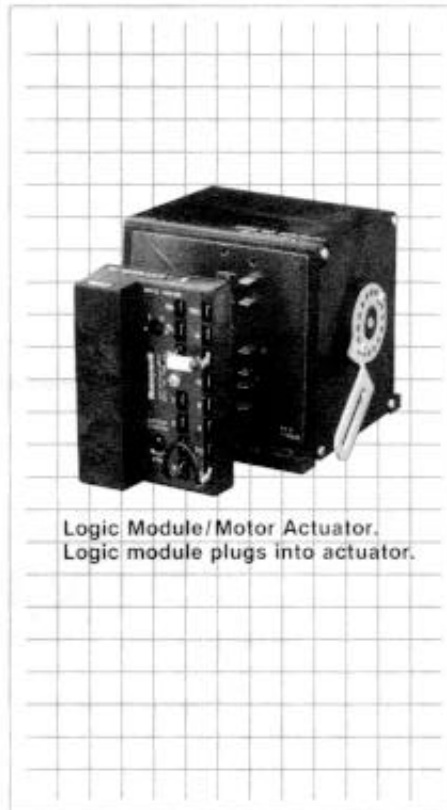
Solid State Logic Module

The economizer's logic module obtains outdoor or return air enthalpy input from one or two remotely-located enthalpy sensors. It is mounted directly on the economizer system's damper actuator which it controls through the input it receives and its interpretation of that input.

When the Sunline Series unit's thermostat calls for cooling, the economizer system responds by causing the system's dampers to open for "free cooling" operation, keeping them closed for mechanical cooling, or a combination of both—depending upon the interpretation of the air enthalpy conditions by the logic module.

In a single input enthalpy system, a changeover set point is selected to open or close the outdoor dampers if the enthalpy falls or rises above the set point.

A differential enthalpy system utilizes outdoor air and return air sensors, and operates in the same manner as the single enthalpy system, except that the logic module first interprets if either outdoor or return air can be used for "free cooling", and which of the two air streams are best suited. Set points are selected on the logic module to enable it to make these decisions.



Logic Module/Motor Actuator.
Logic module plugs into actuator.

Spring Return Damper Actuator

The damper actuator component receives input from the logic module, automatically causing it to change the position of the economizer's dampers in order to maximize the system's cooling operation and efficiency.

In addition to control by the system's logic module, the damper actuator is also controlled by a dry bulb thermistor sensor located in the leaving air section of the Sunline Series unit.

The sensor provides leaving air temperature input to the damper actuator in order to further improve system efficiency and maintain comfort levels. This is accomplished by maintaining the discharge air temperature between 50°F and 56°F.

If the discharge air temperature is above 56°F, the actuator will open the dampers to admit additional outdoor air until the temperature returns to the 50-56 degree range. If the discharge temperature drops below 50°F, the actuator will close the dampers until the temperature returns to the 50-56 degree range.

If after a predetermined period of time, outdoor air cannot maintain the temperature range requirement, mechanical cooling will be initiated.



Heating and Air Conditioning

