

## Electronic Controls Package (ECV)

### Electronic Valve Actuator and State-of-the-Art Controller in a Standard Package

AERCO has combined the speed and performance of an electronic actuator with the precision and convenience of a digital controller as a standard controls package available with all its steam-to-water and water-to-water heaters.

More than simply an add-on actuator and PID controller, the fully-integrated design of the electronic controls packages incorporates a combination flow meter/inlet temperature sensor, inlet steam vacuum/pressure gage at the heat exchanger, feedback sensor, outlet temperature indicator and safety system. Together these components work in concert to maximize the superior performance and control of AERCO's patented valve.

### Features

- Faster and more accurate response than pneumatic or mechanical valves
- Reliable performance – even when load fluctuation exceeds 50% of heater capacity
- Fail-safe auto shutdown response to over-temperature conditions
- Dial-in set point and tune system parameters using control box
- Remote access to monitor or control performance settings
- Full integration to BAS Software
- Easy, one touch start-up
- Available for all AERCO indirect-fired products



## Fast and Precise Temperature Control Under Fluctuating Load Conditions

AERCO's electronic controls package maintains  $\pm 2^{\circ}\text{F}$  temperature control when units are operated under constant load conditions and deliver  $\pm 4^{\circ}\text{F}$  temperature control under normal load changes.

Use of a pilot assembly in the valve body ensures that a small inner seat is the only component which must be actuated in order to regulate the initial flow of steam or water through the valve. Once open, the balanced lower piston design immediately achieves and maintains equal pressure on both sides of the valve. This design approach has enabled AERCO to leverage the faster performance of the smallest possible actuator package. And the equal percentage flow character of the piston assembly affords far greater control over the low loads which characterize typical operating conditions – more than can be achieved with rival linear or quick open flow designs. Finally, the soft seat, designed with ANSI Class VI shutoff, provides a bubble tight seal for applications where periods of zero demand or safety shutdown are encountered.

## Fully Compatible with BAS or EMS Systems via Modbus Open Protocol

For facilities seeking LEEDs accreditation points and those that have taken a building-wide approach to energy efficiency, the electronic controls package supports easy integration with Energy Management Software (EMS) and Building Automation Software (BAS) programs. Using an optional add-in board which supports Modbus communications, customers can centrally monitor and/or control the heater via an RS-232 or RS-485 connection. A standards-based open protocol used throughout the building-controls market, Modbus integration offers a communications gateway to control and/or poll important operating parameters of the heater, including:

- Operating Set Point
- Flow (GPM)
- Overtemp Warning Alarm Setting
- Outlet Temperature
- Overtemp Full Alarm Setting
- Peak Temperature
- Feedback Sensor Loop Break
- Average Temperature
- Feedback Sensor Break
- Low Temperature
- Control Output Signal Strength
- Feedback Sensor Temperature



Cutaway view of electronic actuator and valve

## Digital Controller Simplifies Start-Up and Control

Operating parameters for the heater are entered directly to the digital controller. Just “set and go” without the hassle of manually adjusting components associated with pneumatic-based control solutions.

The electronic package incorporates both feed-forward and feedback features which enable users to tune operations in real time. The steam-to-water controller interfaces is protected by a clear cover which can be locked to discourage unauthorized changes to operating parameters. The power switch for the unit (not pictured) is located on the exterior right side of the controller.

## Steam-to-Water Controller

The upper portion of the display on the left side of the controller panel shows the unit’s real-time outlet temperature as measured by a thermocouple at the shell outlet. Directly below, the operating set point value established by the customer is also displayed. Up and Down control buttons below these two LED screens enable users to change the set point of the unit’s outlet temperature.

To the right, a separate monitor displays the Over Temperature settings for the unit. By default, it displays the real-time outlet temperature as it has been independently measured by a separate thermocouple in the shell. Pressing the Set, Up and Down buttons on this panel enables the customer to view and change the settings for Over Temperature Alarms values.

## Integrated Safety Shut-Off Streamlines Installation

With AERCO equipment, customers no longer must worry about purchasing and installing ancillary parts to support the water heater. The electronic controls package design incorporates an integrated safety system to close the control valve and open the solenoid to dump water in the event of an over-temperature condition. This fail-safe mechanism also protects customers in the event of a power loss at the facility.



## Robust Support for a Wide Variety of Operating Conditions

Support for a wide range of operating conditions makes the electronic controls package the preferred choice for a variety of commercial applications.

Ambient Temperature: 0°F to 131°F

Temperature Set Point Range: 50°F to 205°F

Maximum Available Working Pressure: 235 PSIG @ 400°F

Saturated Steam Operation Conditions: 5 to 150 PSIG @ 350°F

Pressure/Temp. Relief Valve Setting: 150 PSIG/210°F

Size Range of Valve: 1", 1<sup>1</sup>/<sub>4</sub>", 1<sup>1</sup>/<sub>2</sub>", 2", 2<sup>1</sup>/<sub>2</sub>", 3", 4"

End Connection Options:

- NPT<sup>3</sup>/<sub>4</sub>" to 2"
- ANSI Flange (150#)2<sup>1</sup>/<sub>2</sub>" to 4"

Power Configurations:

- 120V/1 Phase/60Hz
- 220V/1 Phase/50Hz

Available with All AERCO Steam-to-Water



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