

EV500S-495-250, ANSI 250 Energy Valve

Cast Iron Body, Stainless Steel Trim



Technical Data

| | |
|---|---|
| Service | chilled or hot water, up to 60% glycol max (open loop/steam not allowed) |
| Flow Characteristic | equal percentage or linear |
| Controllable Flow Range | stem up - open A to AB |
| GPM Range | 149-495 |
| Size [mm] | 5" [125] |
| End Fitting | 250 lb flanged |
| Body | cast iron - ASTM A126 Class B |
| Sensor Housing | ductile iron - GGG50 |
| Stem | 316 stainless steel |
| Stem Packing | NLP EPDM (no lip packing) |
| Seat | 316 stainless steel |
| Plug | stainless steel |
| Body Pressure Rating [psi] | ANSI 250 |
| Number of Bolt Holes | 8 |
| Max Inlet Pressure (Water) | 300 psi (2068 kPa) @ 250°F [121°C] |
| Media Temperature Range (Water) | 14°F to 250°F [-10°C to 120°C] |
| Conductivity of Fluid | Min. 20uS/cm |
| Differential Pressure Range | 7.5 to 50 psid or 1 to 50 psid with flow reductions |
| Max Differential Pressure (Water) | 50 psi (345 kPa) |
| Inlet Length to Meet Specified Measurement Accuracy | 5X nominal pipe size (NPS) |
| Flow Measurement Tolerance | ±2%* |
| Flow Control Tolerance | ±5% |
| Flow Measurement Repeatability | ±0.5% |
| Sensor Technology | electromagnetic |
| Temperature Sensors | PT1000 insertion sensors with thermal well |
| Resolution of Temperature Sensor | 0.18°F (0.1°C) |
| Weight | 278 lb [126 kg] |
| Rated Impulse Voltage | actuator/sensor: 0.8kV (in accordance w/ EN 60730-1) |
| Remote Temperature Sensor Length | Optional: 4.9 ft. [1.5m], 9.8 ft. [3m], 16.4 ft. [5m] Standard: 32.8 ft. [10m] |
| Manual Override | 5 mm hex crank (3/16" Allen), supplied |
| Leakage | ANSI Class IV |
| Servicing | Repack/Rebuild kits available |
| Degree of Protection IEC/EN | IP54 |
| Degree of Protection NEMA/ UL | NEMA 1, UL Enclosure Type 1 |

Application

Water-side control of heating and cooling systems for AHUs and water coils. Equal Percentage/ Linear: heating and cooling applications.

Operation

The Energy Valve is an energy metering pressure independent control valve that measures, documents and optimizes water coil performance.

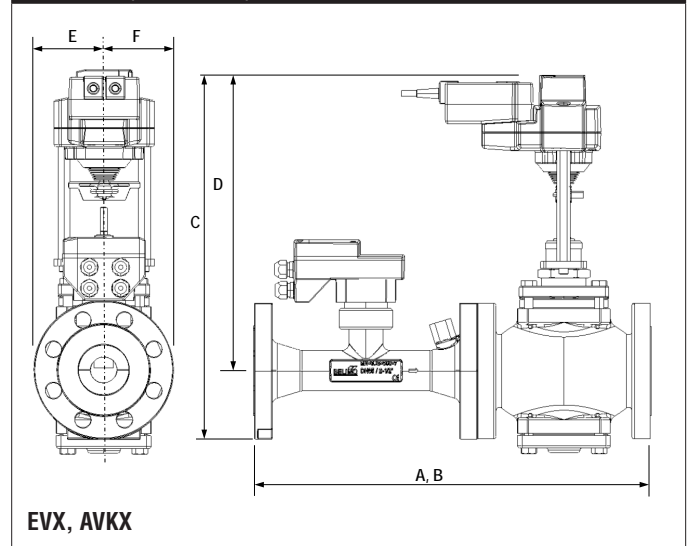
Product Features

The Energy Valve measures energy using its built-in electronic flow sensor and supply and return temperature sensors. Controls power with its Power Control logic providing linear heat transfer regardless of temperature and pressure variations. Manages Low Delta T Syndrome with its built in Delta T Manager. Measures glycol with advanced algorithms in its built in flow sensor. An IoT device utilizing cloud-based technology to optimize performance.

Suitable Actuators

| | Non-Spring | Electronic Fail-Safe |
|----------------|------------|----------------------|
| EV500S-495-250 | EVX | AVKX |

Dimensions (Inches [mm])



| A | B | C | D | E | F |
|-------------|---|--------------|--------------|------------|------------|
| 31.5" [800] | | 23.85" [606] | 20.87" [530] | 4.5" [114] | 4.5" [114] |

Piping

The valves should be mounted in a weather-protected area in a location that is within the ambient limits of the actuator. Allow sufficient room for valve with actuator and for service. The preferred mounting position of the valve is with the valve stem vertical above the valve body, for maximum life. However, the assemblies can be mounted with valve stem vertical above the valve or up to 45 degrees in relation to the horizontal pipe. The actuators should never be mounted underneath the valve, as condensation can build up and result in a failure of the actuators. Do not reverse flow direction.

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*All flow tolerances are at 68°F (20°C) & water.

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EVX24-EV-B

Modulating, Non-Spring Return, 24 V, Shared Logic Technology®



| Technical Data | |
|-------------------------------|--|
| Power Supply | 24 VAC ± 20%, 50/60 Hz, 24 VDC ± 10% |
| Power Consumption Running | 5 W |
| Power Consumption Holding | 1.5 W |
| Transformer Sizing | 7.5 VA (class 2 power source) |
| Electrical Connection | 18 GA plenum rated cable and RJ45 socket (ethernet) |
| Overload Protection | electronic throughout full stroke |
| Electrical Protection | actuators are double insulated |
| Operating Range Y | 2 to 10 VDC (default) VDC variable |
| Input Impedance | 100 kΩ (0.1 mA), 500 Ω |
| Feedback Output U | 2 to 10 VDC (default) VDC variable |
| Direction of Rotation (Motor) | reversible with built-in switch |
| Position Indication | stroke indicator on bracket |
| Manual Override | 5 mm hex crank (3/16" Allen), supplied |
| Running Time (Motor) | 90 sec, constant independent of load |
| Ambient Humidity | 5 to 95% RH non-condensing |
| Ambient Temperature Range | -22°F to 122°F [-30°C to 50°C] |
| Storage Temperature Range | -40°F to 176°F [-40°C to 80°C] |
| Housing | NEMA 1, IP54, UL Enclosure Type 1 |
| Housing Material | Aluminum die cast and plastic casing |
| Agency Listings† | cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC and 2006/95/EC |
| Noise Level (Motor) | <60 dB (A) |
| Servicing | maintenance free |
| Quality Standard | ISO 9001 |
| Weight | 5.7 lb [2.6 kg] |
| Communication | BACnet IP, BACnet MS/TP, listed by BTL, Modbus RTU, Modbus IP, web server, Belimo MP-Bus |

† Use flexible metal conduit. Push the listed conduit fitting device over the actuator's cable to butt against the enclosure. Screw in conduit connector. Jacket the actuators input wiring with listed flexible conduit. Properly terminate the conduit in a suitable junction box. Rated impulse Voltage 800V. Type of action 1. Control pollution degree 3.

In cases where the valve body is electrically isolated from the water pipe, an earth ground should be installed in order for the sensor to work properly. Earth ground can be connected directly on the sensor body. A connection point is provided on the flange of the sensor body.

The Energy Valve is based on Belimo patent and patent pending technology, US-Patent 6,039,304: Ball valve with modified characteristics, US-Patent Pending: 2011/0153089: HVAC actuator comprising a network interface, data store and a processor, US-Patent Pending: 2009/009115: Control of sensor less and brushless DC-Motor.

The Energy Valve incorporates additional technology - Powered by Optimum Energy TM.

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Wiring Diagrams
INSTALLATION NOTES

- Actuators with appliance cables are numbered.
- Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- Actuators may also be powered by 24 VDC.
- Actuators with plenum cable do not have numbers; use color codes instead.
- Meets cULus requirements without the need of an electrical ground connection.

WARNING! LIVE ELECTRICAL COMPONENTS!
 During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

