



5-year warranty


**Technical data**

|                           |                                   |   |
|---------------------------|-----------------------------------|---|
| <b>Functional data</b>    | Valve Size                        | 2.5" [65]                                     |
|                           | Fluid                             | chilled or hot water, up to 60% glycol, steam |
|                           | Fluid Temp Range (water)          | 32...350°F [0...176°C]                        |
|                           | Fluid Temp Range (steam)          | 32...338°F [0...170°C]                        |
|                           | Body Pressure Rating              | ANSI Class 250, up to 280 psi below 350°F     |
|                           | Flow characteristic               | equal percentage                              |
|                           | Servicing                         | repack/rebuild kits available                 |
|                           | Rangeability Sv                   | 85:1  |
|                           | Max Differential Pressure (Steam) | 50 psi [345 kPa]                              |
|                           | Flow Pattern                      | 2-way   |
|                           | Leakage rate                      | ANSI Class III                                |
|                           | Controllable flow range           | stem up - open A – AB                         |
|                           | Cv                                | 65  |
|                           | Maximum Inlet Pressure (Steam)    | 100 psi [690 kPa]                             |
|                           | ANSI Class                        | 250   |
|                           | Body pressure rating note         | up to 280 psi below 350°F                     |
| <b>Materials</b>          | Valve body                        | Cast iron - ASTM A126 Class B                 |
|                           | Valve plug                        | Stainless steel                               |
|                           | Stem seal                         | NLP EPDM (no lip packing)                     |
|                           | Seat                              | Stainless steel AISI 316                      |
|                           | Pipe connection                   | 250 lb flanged                                |
| <b>Suitable actuators</b> | Non-Spring                        | EVB(X)  |
|                           | Electronic fail-safe              | AVKB(X)                                       |

**Safety notes**


- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)
- The valve has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The valve does not contain any parts that can be replaced or repaired by the user.
- When determining the flow rate characteristic of controlled devices, the recognised directives must be observed.

**Product features**

Flow/Mounting details



Dimensions

Dimensional drawings

EVB, EVX, RVB, RVX



| A           | B          | C           | D           | E         | F         | Number of Bolt Holes |
|-------------|------------|-------------|-------------|-----------|-----------|----------------------|
| 12.0" [304] | 9.6" [245] | 23.0" [584] | 18.3" [464] | 3.7" [95] | 3.7" [95] | 8                    |

AFB, AFX



| A           | B          | C           | D           | E         | F          | Number of Bolt Holes |
|-------------|------------|-------------|-------------|-----------|------------|----------------------|
| 12.0" [304] | 9.6" [245] | 21.7" [550] | 16.9" [428] | 3.7" [95] | 5.3" [135] | 8                    |

AVKB, AVKX



| A           | B          | C           | D           | E         | F         | Number of Bolt Holes |
|-------------|------------|-------------|-------------|-----------|-----------|----------------------|
| 12.0" [304] | 9.6" [245] | 23.0" [584] | 18.3" [464] | 3.7" [95] | 3.7" [95] | 8                    |



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Technical data

|                        |                                     |   |
|------------------------|-------------------------------------|---|
| <b>Electrical data</b> | Nominal voltage                     | AC/DC 24 V  |
|                        | Nominal voltage frequency           | 50/60 Hz  |
|                        | Power consumption in operation      | 7.5 W   |
|                        | Power consumption in rest position  | 3 W   |
|                        | Transformer sizing                  | 10 VA (class 2 power source)  |
|                        | Auxiliary switch                    | 2 x SPDT, 3 A resistive (0.5 A inductive) @ AC 250 V, one set at 10°, one adjustable 10...90°             |
|                        | Switching capacity auxiliary switch | 3 A resistive (0.5 A inductive) @ AC 250 V  |
|                        | Electrical Connection               | (2) 18 GA appliance cables with or without 1/2" conduit connectors, 3 ft [1 m], 10 ft [3 m] or 16ft [5 m] |
|                        | Overload Protection                 | electronic throughout 0...95° rotation  |
| <b>Functional data</b> | Operating range Y                   | 2...10 V  |
|                        | Operating range Y note              | 4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)   |
|                        | Operating range Y variable          | Start point 0.5...30 V<br>End point 2.5...32 V  |
|                        | Options positioning signal          | variable (VDC, PWM, on/off, floating point)   |
|                        | Position feedback U                 | 2...10 V  |
|                        | Position feedback U note            | Max. 0.5 mA   |
|                        | Position feedback U variable        | VDC variable  |
|                        | Direction of motion motor           | selectable with switch 0/1  |
|                        | Direction of motion fail-safe       | reversible with cw/ccw mounting   |
|                        | Manual override                     | 5 mm hex crank (3/16" Allen), supplied  |
|                        | Angle of rotation                   | 95°, adjustable with mechanical end stop, 35...95°  |
|                        | Angle of rotation note              | adjustable with mechanical end stop, 35...95°   |
|                        | Running Time (Motor)                | default 150 s, variable 70...220 s  |
|                        | Running time motor variable         | 70...220 s  |
|                        | Running time fail-safe              | <20 s   |
|                        | Override control                    | MIN (minimum position) = 0%<br>MID (intermediate position) = 50%<br>MAX (maximum position) = 100%         |
|                        | Noise level, motor                  | 40 dB(A)  |
|                        | Noise level, fail-safe              | 62 dB(A)  |
| Position indication    | Mechanical                          |   |
| <b>Safety data</b>     | Degree of protection IEC/EN         | IP54  |
|                        | Degree of protection NEMA/UL        | NEMA 2 UL Enclosure Type 2  |
|                        | Agency Listing                      | cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU                                |
|                        | Quality Standard                    | ISO 9001  |
|                        | Ambient temperature                 | -22...122°F [-30...50°C]  |

|                     |  |
|---------------------|--|
| Storage temperature | -40...176°F [-40...80°C]                                     |
| Ambient humidity    | max. 95% r.H., non-condensing                                |
| Servicing           | maintenance-free   |
| <b>Weight</b>       | <b>Weight</b> 4.6 lb [2.1 kg]                                |
| <b>Materials</b>    | <b>Housing material</b> Galvanized steel and plastic housing |

**Safety notes**


- NEMA 4X, 316L stainless steel enclosure.
- Battery Back Up System for SY(7~10)-110
- ZS-300 without brackets.
- NEMA 4X, 304 stainless steel enclosure.
- MFT95 resistor kit for 4 to 20 mA control applications.

**Electrical installation**
**⚠ 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.



Meets cULus requirements without the need of an electrical ground connection.



Actuators with appliance cables are numbered.



Apply only AC line voltage or only UL-Class 2 voltage to the terminals of auxiliary switches. Mixed or combined operation of line voltage/safety extra low voltage is not allowed.



Provide overload protection and disconnect as required.



Actuators may also be powered by 24 VDC.



Two built-in auxiliary switches (2x SPDT), for end position indication, interlock control, fan startup, etc.



Only connect common to negative (-) leg of control circuits.



A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.



Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 V line.



For triac sink the Common connection from the actuator must be connected to the Hot connection of the controller. Position feedback cannot be used with a triac sink controller; the actuator internal common reference is not compatible.



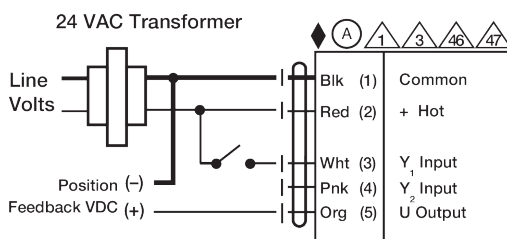
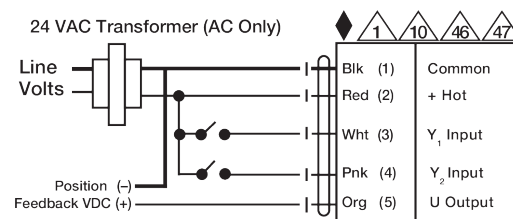
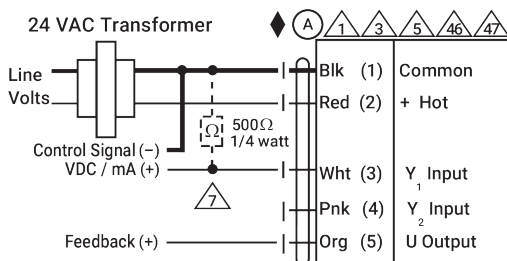
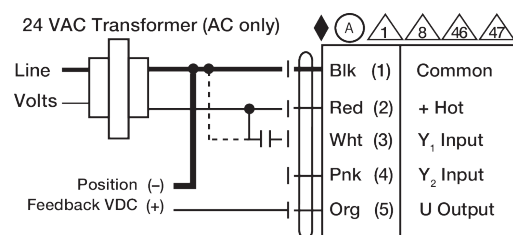
IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).

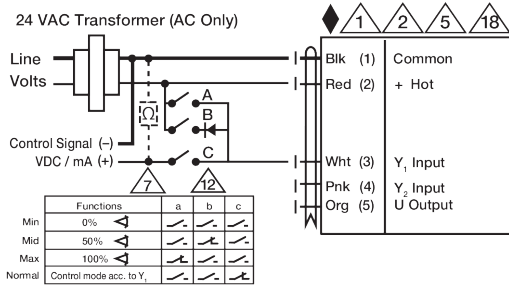


Actuators may be controlled in parallel. Current draw and input impedance must be observed.

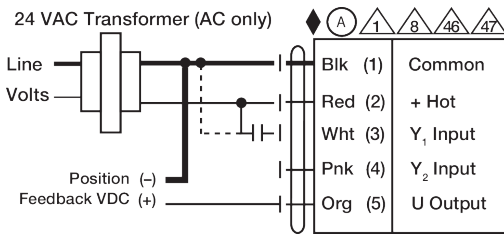


Master-Slave wiring required for piggy-back applications. Feedback from Master to control input(s) of Slave(s).

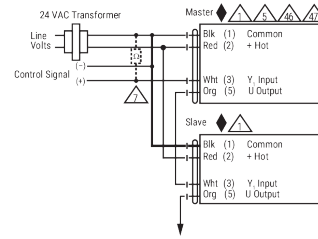

**On/Off**

**Floating Point**

**VDC/mA Control**

**PWM Control**



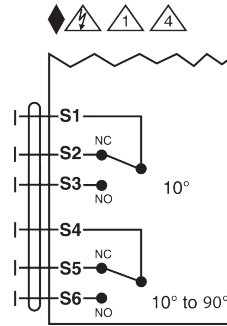
Override Control



PWM Control



Master - Slave



Auxiliary Switches