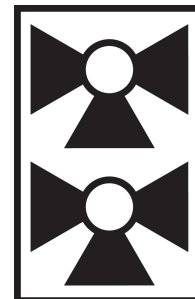




5-year warranty



## Type overview

| Type         | DN |
|--------------|----|
| B320-186-073 | 20 |

## Technical data

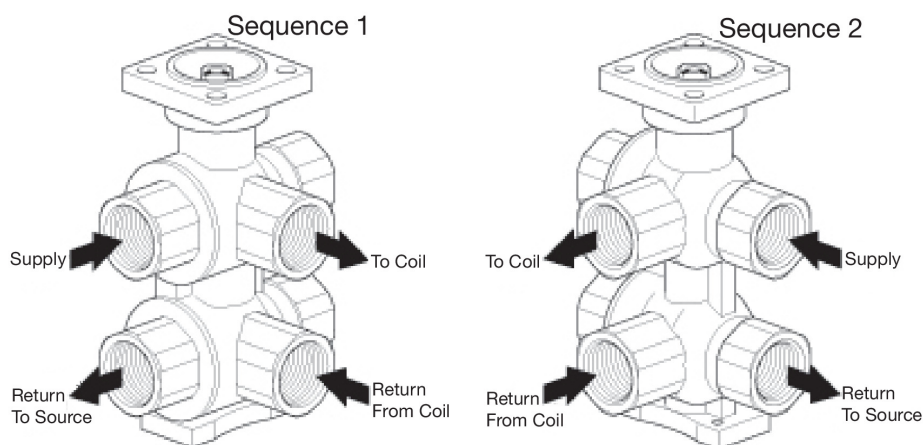
|                 |                                        |                                                                                  |
|-----------------|----------------------------------------|----------------------------------------------------------------------------------|
| Functional data | Valve size [mm]                        | 0.75" [20]                                                                       |
|                 | Fluid                                  | chilled or hot water, up to 60% glycol                                           |
|                 | Fluid Temp Range (water)               | 43...180°F [6...82°C]                                                            |
|                 | Body Pressure Rating                   | 232 psi                                                                          |
|                 | Close-off pressure $\Delta p_s$        | 50 psi                                                                           |
|                 | Differential pressure $\Delta p_{max}$ | 15psi                                                                            |
|                 | Flow characteristic                    | linear                                                                           |
|                 | Servicing                              | maintenance-free                                                                 |
|                 | Flow Pattern                           | 6-way                                                                            |
|                 | Leakage rate                           | 0%                                                                               |
|                 | Controllable flow range                | sequence 1 (angle 0...30°), dead zone (30...60°),<br>sequence 2 (angle 60...90°) |
|                 | Seq 1 Cv                               | 1.86                                                                             |
|                 | Seq 2 Cv                               | 0.73                                                                             |
| Materials       | Valve body                             | Nickel-plated brass body                                                         |
|                 | Stem                                   | nickel-plated brass                                                              |
|                 | Stem seal                              | EPDM (lubricated)                                                                |
|                 | Seat                                   | PTFE                                                                             |
|                 | Characterized disc                     | chrome plated steel                                                              |
|                 | Pipe connection                        | NPT                                                                              |
|                 | O-ring                                 | EPDM                                                                             |
|                 | Ball                                   | chrome plated brass                                                              |

## Product features

**Application** The 6-way characterized control valve is ideal for chilled beams, radiant ceilings, and fan coil units offering reduced wiring by using a single actuator instead of two. It eliminates the need for a change-over valve and enables the use of a single coil for heating and cooling.

**Operation** A loop pressure relief is designed into port number two (2). This allows the increased pressure to dissipate to the supply loop on port number one (1). This is intended to release any pressure build up in the loop (coil) when the valve is in the closed position and is isolated from the system expansion vessel. The change in pressure occurs due to a change in the media temperature in the coil while isolated from the pressure vessel. The pressure relief does not affect the efficiency of the system because cross-flow cannot occur between the heating and cooling loops. The system loops (heating/cooling) should share a common expansion vessel to keep the system pressure and volume balanced.

### Flow/Mounting details



### Accessories

#### Mechanical accessories

#### Description

Fixing bracket for 6-way valve DN 15/20

#### Type

ZR-004

### Dimensions

#### Type

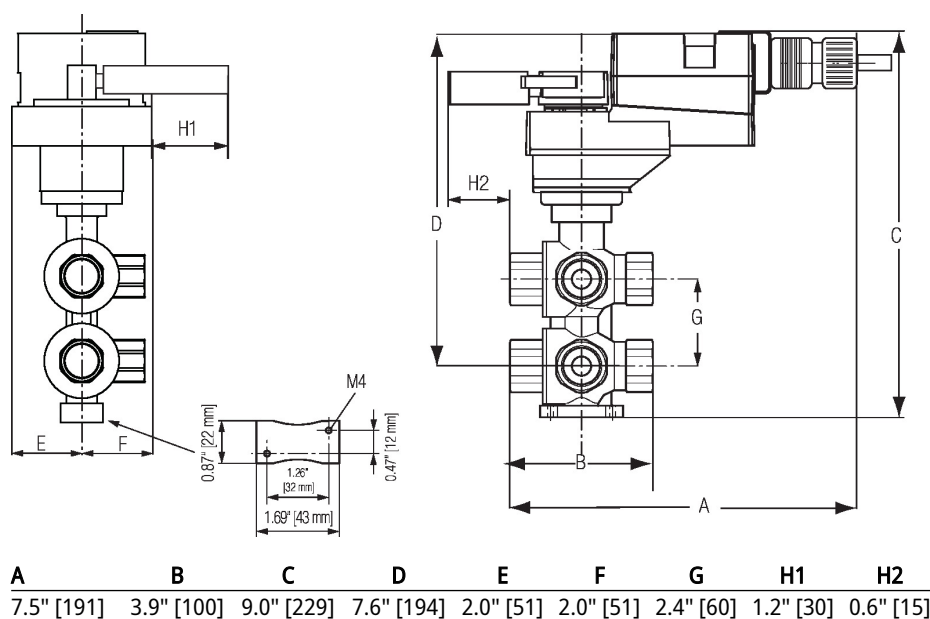
B320-186-073

#### DN

20

#### Weight

4.63 lb [2.1 kg]





5-year warranty



## Technical data

|                        |                                    |                                                                                                     |
|------------------------|------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>Electrical data</b> | Nominal voltage                    | AC/DC 24 V                                                                                          |
|                        | Nominal voltage frequency          | 50/60 Hz                                                                                            |
|                        | Nominal voltage range              | AC 19.2...28.8 V / DC 21.6...28.8 V                                                                 |
|                        | Power consumption in operation     | 2.5 W                                                                                               |
|                        | Power consumption in rest position | 1.2 W                                                                                               |
|                        | Transformer sizing                 | 5 VA                                                                                                |
|                        | Electrical Connection              | 18 GA plenum cable with 1/2" conduit connector, degree of protection NEMA 2 / IP54, 1 m 3 m and 5 m |
|                        | Overload Protection                | electronic throughout 0...90° rotation                                                              |
| <b>Functional data</b> | Electrical Protection              | actuators are double insulated                                                                      |
|                        | Operating range Y                  | 2...10 V                                                                                            |
|                        | Operating range Y note             | 4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)                                                         |
|                        | Input Impedance                    | 100 kΩ for DC 2...10 V (0.1 mA), 500 Ω for 4...20 mA, 1500 Ω for PWM and On/Off                     |
|                        | Operating range Y variable         | Start point 0.5...30 V<br>End point 2.5...32 V                                                      |
|                        | Operating modes optional           | variable (VDC, 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                                                                          |
|                        | Manual override                    | external push button                                                                                |
|                        | Angle of rotation                  | 90°                                                                                                 |
|                        | Angle of rotation note             | adjustable with mechanical stop                                                                     |
|                        | Running Time (Motor)               | 150 s / 90°                                                                                         |
|                        | Running time motor variable        | 35...150 s                                                                                          |
|                        | Noise level, motor                 | 35 dB(A)                                                                                            |
|                        | Position indication                | Mechanically, pluggable                                                                             |
| <b>Safety data</b>     | Power source UL                    | Class 2 Supply                                                                                      |
|                        | Degree of protection IEC/EN        | IP54                                                                                                |
|                        | Degree of protection NEMA/UL       | NEMA 2                                                                                              |
|                        | Enclosure                          | 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                                                                                            |
|                        | UL 2043 Compliant                  | Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC         |
|                        | Ambient humidity                   | Max. 95% RH, non-condensing                                                                         |

|             |                     |                                      |
|-------------|---------------------|--------------------------------------|
| Safety data | Ambient temperature | -22...122°F [-30...50°C]             |
|             | Storage temperature | -40...176°F [-40...80°C]             |
|             | Servicing           | maintenance-free                     |
| Weight      | Weight              | 1.5 lb [0.70 kg]                     |
| Materials   | Housing material    | Galvanized steel and plastic housing |

**Footnotes** †Rated Impulse Voltage 800V, Type action 1.B, Control Pollution Degree 3.

## Accessories

|                        |                                                                                                                                       |             |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Gateways               | <b>Description</b>                                                                                                                    | <b>Type</b> |
|                        | Gateway MP to BACnet MS/TP                                                                                                            | UK24BAC     |
| Electrical accessories | Gateway MP to Modbus RTU                                                                                                              | UK24MOD     |
|                        | Gateway MP to LonWorks                                                                                                                | UK24LON     |
|                        | <b>Description</b>                                                                                                                    | <b>Type</b> |
|                        | Battery backup system, for non-spring return models                                                                                   | NSV24 US    |
|                        | Battery, 12 V, 1.2 Ah (two required)                                                                                                  | NSV-BAT     |
|                        | Auxiliary switch 1 x SPDT add-on                                                                                                      | S1A         |
|                        | Auxiliary switch 2 x SPDT add-on                                                                                                      | S2A         |
|                        | Feedback potentiometer 140 Ω add-on, grey                                                                                             | P140A GR    |
|                        | Feedback potentiometer 1 kΩ add-on, grey                                                                                              | P1000A GR   |
|                        | Feedback potentiometer 10 kΩ add-on, grey                                                                                             | P10000A GR  |
|                        | Feedback potentiometer 2.8 kΩ add-on, grey                                                                                            | P2800A GR   |
|                        | Feedback potentiometer 500 Ω add-on, grey                                                                                             | P500A GR    |
|                        | Feedback potentiometer 5 kΩ add-on, grey                                                                                              | P5000A GR   |
| Tools                  | <b>Description</b>                                                                                                                    | <b>Type</b> |
|                        | Connection cable 10 ft [3 m], A: RJ11 6/4 ZTH EU, B: 3-pin Weidmüller and supply connection                                           | ZK4-GEN     |
|                        | Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices | ZTH US      |

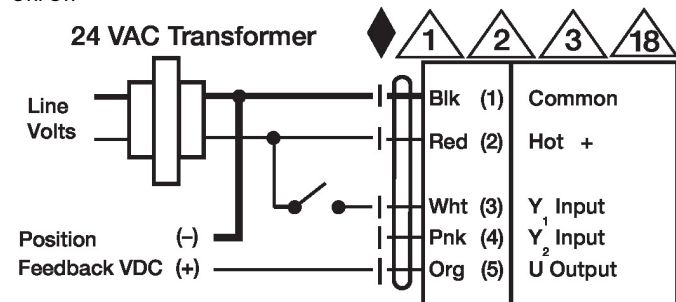
## Electrical installation

### INSTALLATION NOTES

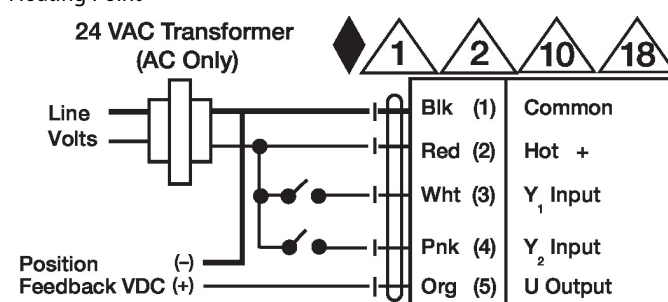
-  Provide overload protection and disconnect as required.
-  Actuators may be connected in parallel. Power consumption and input impedance must be observed.
-  Actuators may also be powered by DC 24 V.
-  Only connect common to negative (-) leg of control circuits.
-  A 500 Ω resistor (ZG-R01) converts 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 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.

### Wiring diagrams

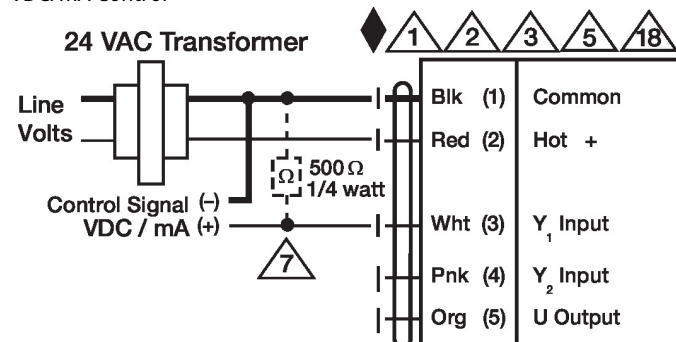
#### On/Off



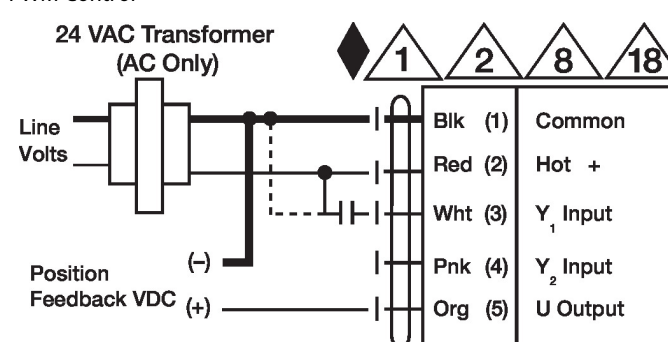
#### Floating Point



#### VDC/mA Control



#### PWM Control



#### Override Control

