

Ball Valve (VS), DN 1 1/2" [40], 2-way, Cv 84



2-year warranty

Picture may differ from product

## Type overview

| Type   | DN          |
|--------|-------------|
| B239VS | 1 1/2" [40] |

## Technical data

|                    |                                   |   |
|--------------------|-----------------------------------|---|
| Functional data    | Valve size [mm]                   | 1.5" [40]                                     |
|                    | Fluid                             | chilled or hot water, up to 60% glycol, steam |
|                    | Fluid Temp Range (water)          | -22...280°F [-30...138°C]                     |
|                    | Body Pressure Rating              | 600 psig WOG psi                              |
|                    | Close-off pressure Δps            | 600 psi                                       |
|                    | Flow characteristic               | modified equal percentage                     |
|                    | Leakage rate                      | ANSI Class VI                                 |
|                    | Pipe connection                   | Internal thread<br>NPT (female)               |
|                    | Max Differential Pressure (Steam) | 35 psi  |
|                    | Flow Pattern                      | 2-way   |
|                    | Controllable flow range           | 90° rotation                                  |
|                    | Cv                                | 84  |
|                    | Maximum Inlet Pressure (Steam)    | 35 psi [241 kPa]                              |
| Materials          | Valve body                        | Bronze B584-C84400                            |
|                    | Housing seal                      | PTFE  |
|                    | Stem                              | 316 stainless steel                           |
|                    | Stem seal                         | RPTFE   |
|                    | Seat                              | RPTFE   |
|                    | Lock nut                          | stainless steel                               |
|                    | Retainer                          | B584-C84400 bronze                            |
|                    | Ball                              | 316 stainless steel                           |
| Suitable actuators | Non Fail-Safe                     | GMB(X)<br>PRB(X)<br>GRCB(X)<br>GRB(X)         |
|                    | Spring                            | AF  |
|                    | Electronic fail-safe              | PKRB(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)

## Product features

**Application** This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV Box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

This valve is designed with MFT functionality which facilitates the use of various control input.

Up to 35 psi steam

1/2" - 2" 600 PSIG WOG, Cold Non-Shock

Federal Specification: WW-V-35C, Type II

Composition: BZ

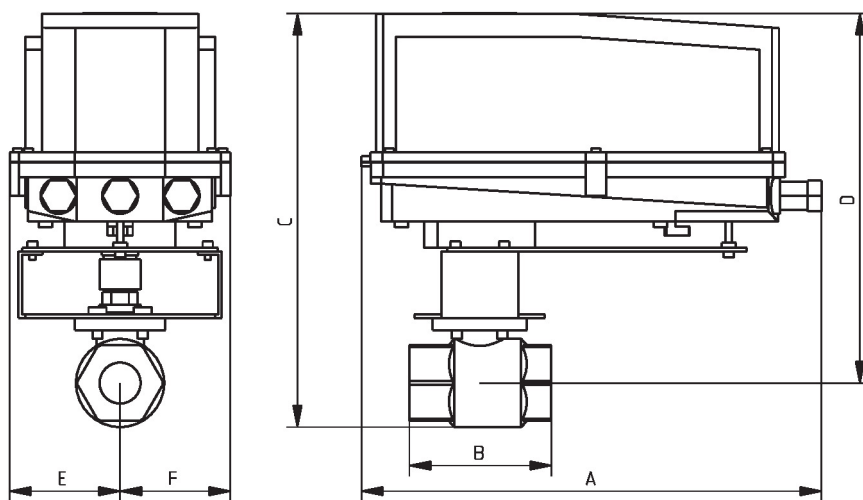
Style: 3

## Flow/Mounting details



## Dimensions

| Type   | DN          | Weight          |
|--------|-------------|-----------------|
| B239VS | 1 1/2" [40] | 4.5 lb [2.1 kg] |



B239VS+GRC..N4

| A             | B          | C          | D          | E         | F         |
|---------------|------------|------------|------------|-----------|-----------|
| 11.7" [297.5] | 4.4" [112] | 9.7" [247] | 7.7" [196] | 2.3" [58] | 2.3" [58] |

MFT/programmable, Electrical fail-safe,  
24...240 V



5-year warranty



## Technical data

|                               |                                     |   |
|-------------------------------|-------------------------------------|---|
| <b>Electrical data</b>        | Nominal voltage                     | AC 24...240 V / DC 24...125 V   |
|                               | Nominal voltage frequency           | 50/60 Hz  |
|                               | Nominal voltage range               | AC 19.2...264 V / DC 19.2...137.5 V   |
|                               | Power consumption in operation      | 52 W  |
|                               | Power consumption in rest position  | 9 W   |
|                               | Transformer sizing                  | with 24 V 54 VA / with 240 V 68 VA  |
|                               | Auxiliary switch                    | 2x SPDT, 1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V (II, reinforced insulation), 1x 10° / 1x 0...90° (default setting 85°) |
|                               | Switching capacity auxiliary switch | 1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V (II, reinforced insulation)   |
|                               | Electrical Connection               | Terminal blocks, (PE) Ground-Screw  |
|                               | Overload Protection                 | electronic throughout 0...90° rotation  |
| <b>Data bus communication</b> | Communicative control               | BACnet MS/TP<br>Modbus RTU<br>MP-Bus  |
|                               |                                     |   |
| <b>Functional data</b>        | Operating range Y                   | 2...10 V  |
|                               | Operating range Y note              | 4...20 mA   |
|                               | Input impedance                     | 100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA, 1500 Ω for 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  |
|                               | Setting Fail-Safe Position          | 0...100%, adjustable with Belimo Assistant App (default setting 0%)   |
|                               | Bridging time (PF)                  | 2 s   |
|                               | Bridging time (PF) variable         | 0...10 s  |
|                               | Pre-charging time                   | 5...20 s  |
|                               | Direction of motion motor           | reversible with app   |
|                               | Direction of motion fail-safe       | reversible with app   |
|                               | Manual override                     | 7 mm hex crank, supplied  |
|                               | Angle of rotation                   | 90°   |
|                               | Running Time (Motor)                | 35 s / 90°  |
|                               | Running time motor variable         | 30...120 s  |

## Technical data

|                        |                              |   |
|------------------------|------------------------------|---|
| <b>Functional data</b> | Running time fail-safe       | <30 s   |
|                        | Noise level, motor           | 68 dB(A)  |
|                        | Noise level, fail-safe       | 62 dB(A)  |
|                        | Position indication          | top mounted domed indicator   |
| <b>Safety data</b>     | Power source UL              | Class 2 Supply  |
|                        | Degree of protection IEC/EN  | IP66/67   |
|                        | Degree of protection NEMA/UL | NEMA 4X   |
|                        | Enclosure                    | UL Enclosure Type 4X  |
|                        | Agency Listing               | cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU |
|                        | Quality Standard             | ISO 9001  |
|                        | Ambient humidity             | Max. 100% RH  |
|                        | Ambient temperature          | -22...122°F [-30...50°C]  |
|                        | Servicing                    | maintenance-free  |
| <b>Weight</b>          | Weight                       | 15 lb [6.6 kg]  |
| <b>Materials</b>       | Housing material             | Die cast aluminium and plastic casing   |

## Product features

|                              |  |
|------------------------------|--|
| <b>Default/Configuration</b> | Default parameters for DC 2...10 V applications of the PKR...MFT actuator are assigned during manufacturing. If required, different parameters of the actuator can be ordered. These parameters are variable and can be modified by factory pre-set, the handheld ZTH US or using the Belimo App on a smart phone with Near Field Communications (NFC) programming.  |
| <b>Application</b>           | PR Series valve actuators are designed with an integrated linkage and visual position indicators. For outdoor applications, the installed valve must be mounted with the actuator at or above horizontal. For indoor applications the actuator can be in any location including directly under the valve.  |
| <b>Operation</b>             | <p>The PR series actuator provides 90° of rotation and a visual indicator shows the position of the valve. The PR Series actuator uses a low power consumption brushless DC motor and is electronically protected against overload. A universal power supply is furnished to connect supply voltage in the range of AC 24...240 V and DC 24...125 V. Included is a smart heater with thermostat to eliminate condensation. Two auxiliary switches are provided; one set at 10° open and the other is field adjustable. Running time is field adjustable from 30...120 seconds by using the Near Field Communication (NFC) app and a smart phone.</p> <p>†Use 60°C/75°C copper wire size range 12...28 AWG, stranded or solid. 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 4000 V. Type of action 1. Control pollution degree 3.</p> |
| <b>Bridging time</b>         | <p>Power failures can be bridged up to a maximum of 10 s.</p> <p>In the event of a power failure, the actuator will remain stationary in accordance with the set bridging time. If the power failure is greater than the set bridging time, the actuator will move into the selected fail-safe position.</p> <p>The bridging time set at the factory is 2 s. It can be modified on site in operation by means of the Belimo service tool MFT-P.</p> <p>Settings: The rotary knob must not be set to the "PROG FAIL-SAFE" position!</p> <p>For retroactive adjustments of the bridging time with the Belimo service tool MFT-P or with the ZTH EU adjustment and diagnostic device only the values need to be entered.</p>  |

## Product features

**Factory settings** Default parameters for DC 2...10 V applications of the PKR...MFT actuator are assigned during manufacturing. If required, different parameters of the actuator can be ordered. These parameters are variable and can be modified by factory pre-set, the handheld ZTH US or using the Belimo App on a smart phone with Near Field Communications (NFC) programming.

## Accessories

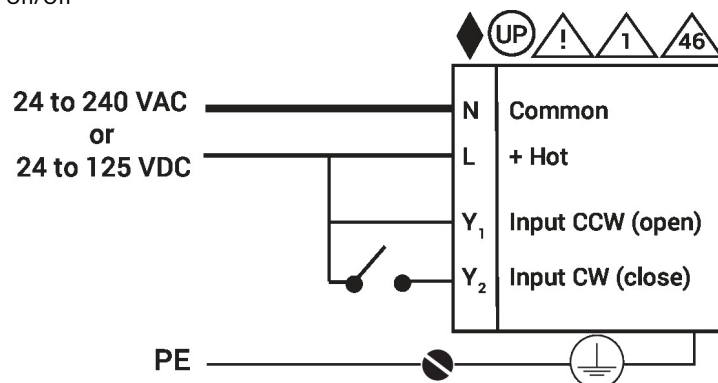
| Gateways               | Description   | Type      |
|------------------------|---|-----------|
|                        | Gateway MP to BACnet MS/TP  | UK24BAC   |
|                        | Gateway MP to Modbus RTU  | UK24MOD   |
|                        | Gateway MP to LonWorks  | UK24LON   |
| Electrical accessories | Description   | Type      |
|                        | Service tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices | ZTH US    |
| Mechanical accessories | Description   | Type      |
|                        | Hand crank for PR, PKR, PM  | ZG-HND PR |
| Tools                  | Description   | Type      |
|                        | Connecting 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

- ◆ Meets cULus requirements without the need of an electrical ground connection.
- UP Universal Power Supply (UP) models can be supplied with 24...240 V.
- ⚠ Disconnect power.
- 1 Provide overload protection and disconnect as required.
- 4 Two built-in auxiliary switches (2x SPDT), for end position indication, interlock control, fan startup, etc.
- 5 Only connect common to negative (-) leg of control circuits.
- 46 Actuators may be controlled in parallel. Current draw and input impedance must be observed.
- ⚠ **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.

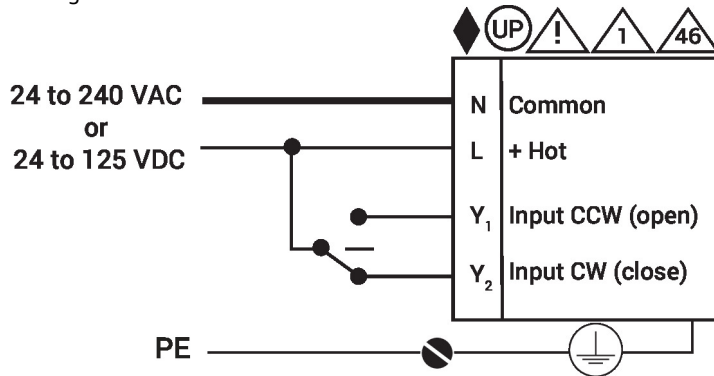
## Wiring diagrams

On/Off

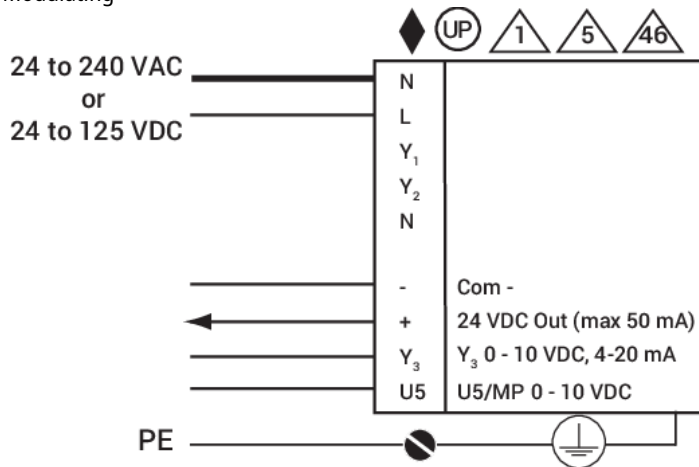


## Wiring diagrams

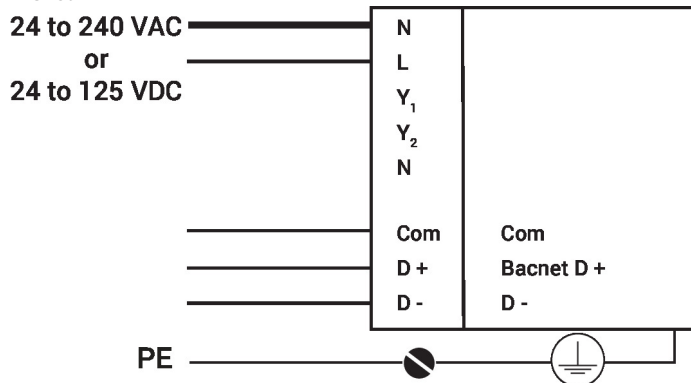
### Floating Point



### Modulating



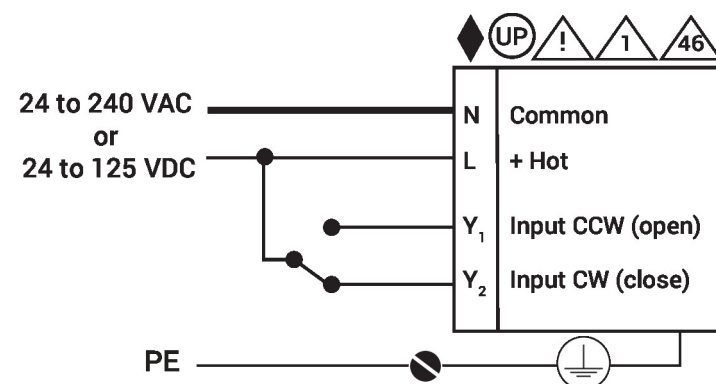
### BACnet



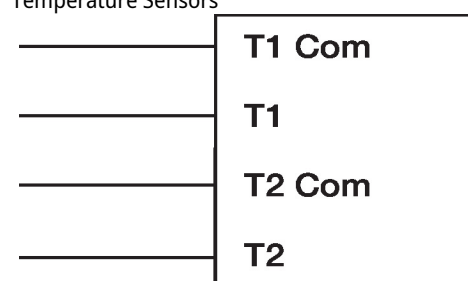
## Electrical installation

## Wiring diagrams

On/Off



## Temperature Sensors



## Auxiliary Switches

